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13. ABSTRACT (Maximum 200 words) <p>THIS REPORT DOCUMENTS THE PHASE I CONTAMINATION SURVEY OF SITE 36-17 WHICH WAS USED FOR DISPOSAL OF SOLID WASTES IN PITS AND TRENCHES.</p> <p>99 SAMPLES FROM 46 BORINGS WERE ANALYZED FOR VOLATILE AND SEMIVOLATILE ORGANICS AND METALS WITH SEPARATE ANALYSES FOR HG, AS, AND DBCP. HIGH LEVELS OF CR, CU, ZN, DLDNR, ENDRN, DIMP, CLDAN, DBCP, CPMS, AND ALDRN WERE DETECTED IN THE SAMPLES. METAL ANOMALIES WERE ALSO DETECTED AT THE SITE.</p> <p>AN EXTENSIVE PHASE II PROGRAM CONSISTING OF 40 ADDITIONAL BORINGS AND MORE GEOPHYSICAL INVESTIGATIONS IS RECOMMENDED TO BETTER LOCATE THE DISPOSAL TRENCHES. THE VOLUME OF CONTAMINATED MATERIAL PRESENT IS ESTIMATED AT 2,603,000 CUBIC YARDS.</p> <p>APPENDICES: PHOTOGRAPHS, PHASE I ANALYTICAL DATA.</p>				
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LITIGATION TECHNICAL SUPPORT AND SERVICES

ROCKY MOUNTAIN ARSENAL

PHASE II SECTION 36

DRAFT FINAL SOURCE REPORTS 36-UNC, 36-3, AND 36-17

TASK NUMBER 1 (36-17)

MAY 1986

ENVIRONMENTAL SCIENCE AND ENGINEERING

PROGRAM MANAGER'S OFFICE FOR ROCKY MOUNTAIN ARSENAL

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LITIGATION TECHNICAL SUPPORT AND SERVICES

ROCKY MOUNTAIN ARSENAL

PHASE II
SECTION 36

DRAFT FINAL SOURCE REPORTS
36-UNC, 36-3, and 36-17
MAY 1986

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SOURCE 36-17: COMPLEX DISPOSAL ACTIVITY

1.0 PHYSICAL SETTING

1.1 LOCATION

This source is characterized by a variety of disposal practices in numerous areas with overlapping boundaries and imprecise history. This site contains both a northern and southern section and is approximately 107 acres in size (Figure 36-17-1a and 36-17-1b). For the most part disposal of solid wastes in trenches and pits has occurred. The following information has been obtained for Source 36-17:

Estimated Areal Extent = 4,685,000 ft²

Estimated Vertical Extent = 15 ft

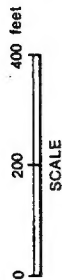
Estimated Volume = 2,603,000 yd³ (RMACCPMT, 1984)

Revised Areal Extent = 4,181,000 ft²

As a result of program changes the areal extent of Source 36-17 was revised. Program changes include reduction of the scale of investigation at Sources 36-9 and 36-16 which are both contained within Source 36-17N. Sources 36-9 and 36-16 were categorized as an Incendiary and Munitions Test Site and an Incendiary Burn Site, respectively. Both sources were believed to have resulted from Army activities. During Phase I, these sources were considered part of Source 36-17. The southern portion of Source 36-17 was reduced in extent due to the expansion of Source 36-3. The revised Source 36-17 areal extent is cited above. Evidence of disposal activities is clearly visible within this site. Two open trenches exist in Source 36-17N. Broken vials and other debris are found in Source 36-17S, just south of Source 36-3 in what has been referred to as the "baby bottle area". Views north and west for Source 36-17N and northwest and southwest for Source 36-17S are shown in photographs in Appendix 36-17-A.

1.2 GEOLOGY

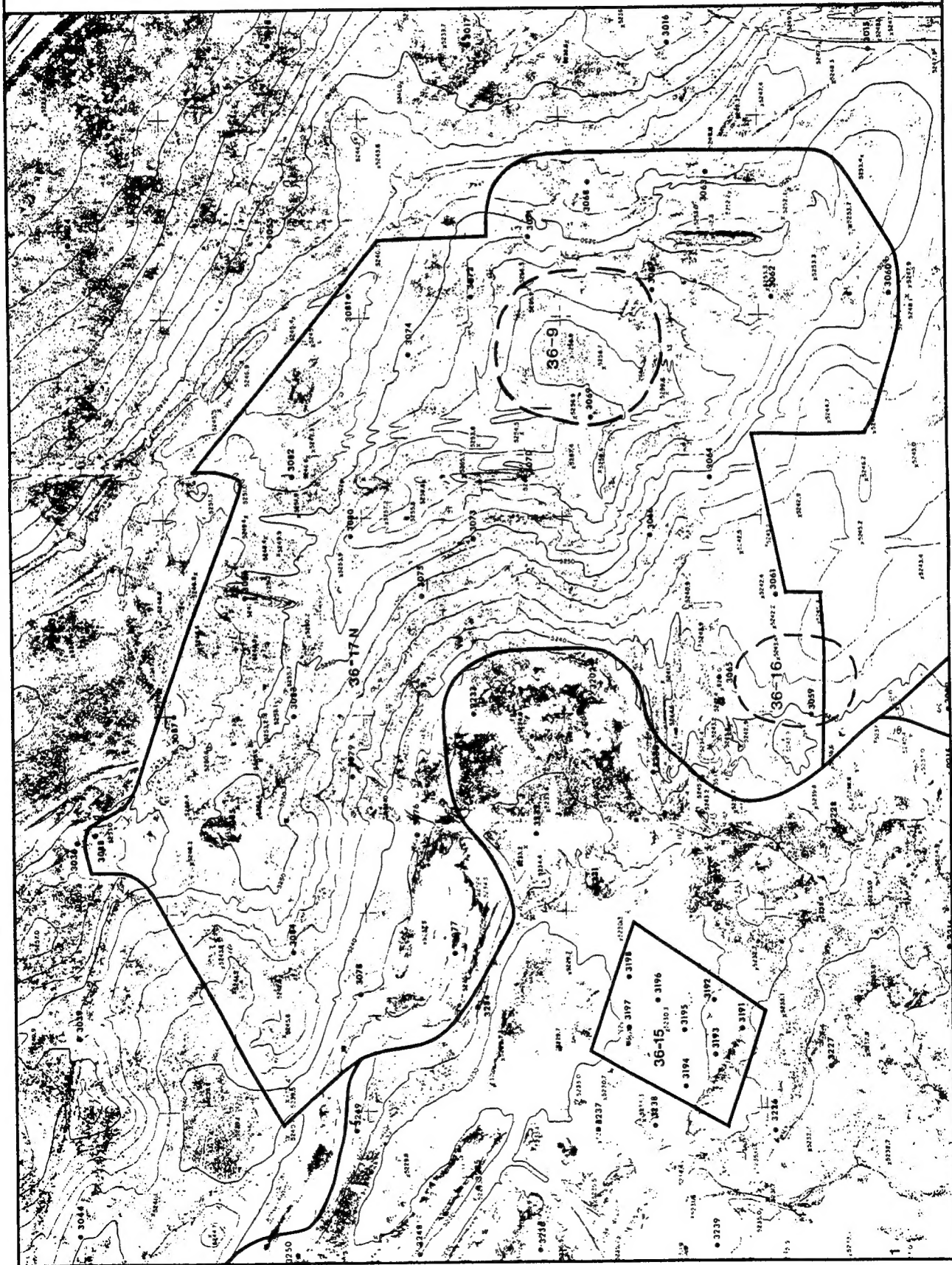
This source, located in the eastern half of Section 36, is divided into a northern and southern sector and extends almost the entire length of



EXPLANATION
• Phase I Boring

Figure 36-17-1a
SOURCE 36-17N
PHASE I INVESTIGATION
BORING LOCATION MAP
RMA, SECTION 36

Prepared for:
U.S. Army Program Manager's Office
For Rocky Mountain Arsenal
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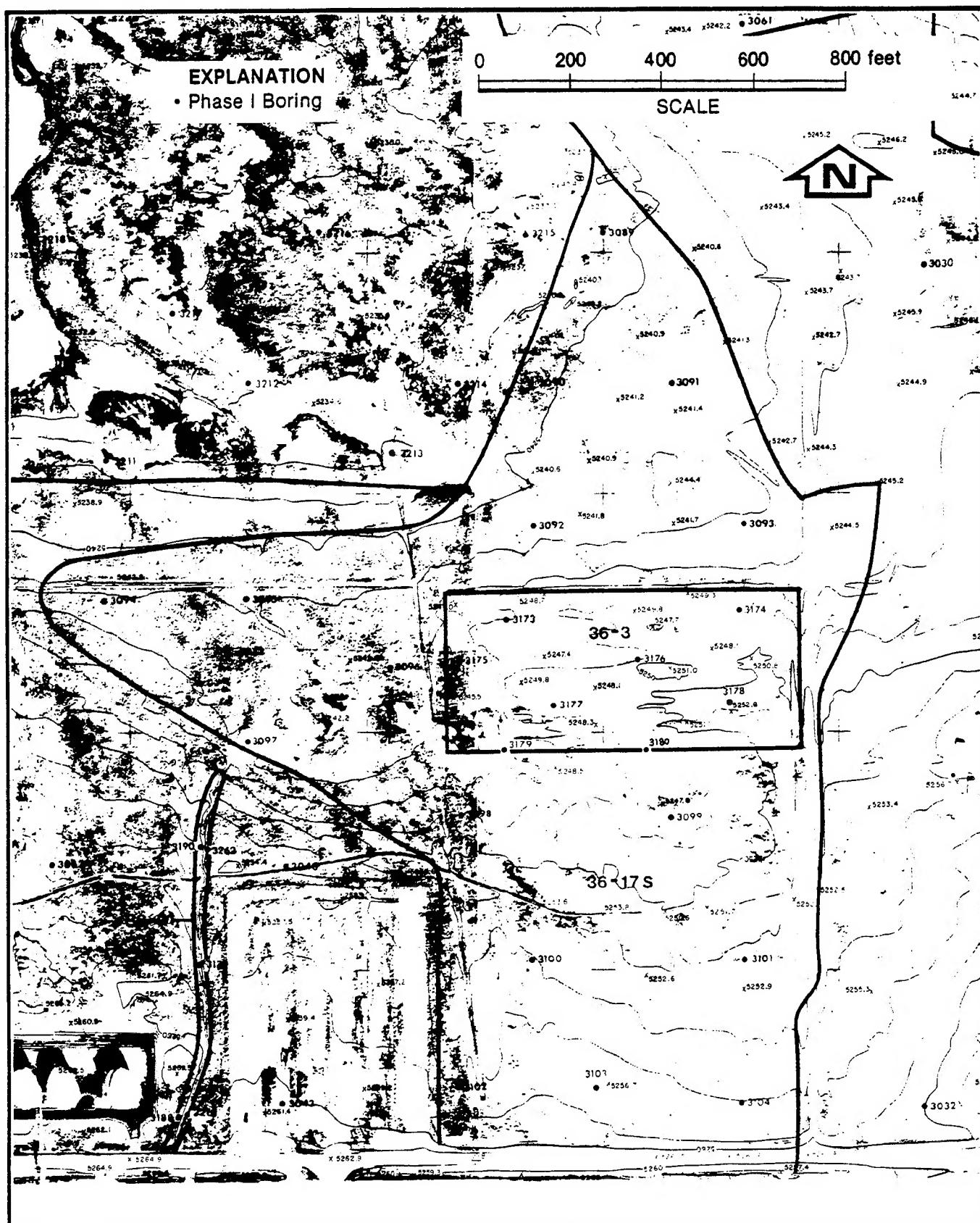


Figure 36-17-1b
SOURCE 36-17S, PHASE I INVESTIGATION
BORING LOCATION MAP
RMA, SECTION 36
SOURCE: ESE, 1986

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Section 36. The center of Source 36-17N sits on a bedrock high. Alluvial thickness beneath this site was reported at 20 to 30 ft, with the thickest alluvium closest to Basin A. This alluvium is largely silty sand. The underlying Denver Formation consists of interbedded clays, silty sand, and organic rich clays. Ground water flow is generally to the north/northwest.

Alluvium thickness in Source 36-17S was also reported at 20 to 30 ft, but the alluvium consists of interbedded clays and silty sands. The Denver Formation, as in most locations, consists of interbedded silts, silty sands, clays, and organic rich clays.

The Phase I boring program results indicate that the source is underlain by alluvial materials consisting of interbedded silts and silty sands. These materials were encountered to the depths explored in Source 36-17S, however, bedrock was encountered beneath Source 36-17N at depths ranging from 11 to 17.5 ft. Boring logs representative of Source 36-17 are presented in Figures 36-17-2 and 36-17-3.

1.3 HYDROLOGY

Surface waters from Source 36-17N may drain towards Basin A in the west and towards First Creek in the eastern portion. Surface waters from Source 36-17S drain northeastward towards First Creek from most of this site. Ground water flow is generally to the north.

The water table was encountered in eight borings, seven of which were located in Source 36-17S. A summary of the depth to water table and estimated water table elevations is presented below:

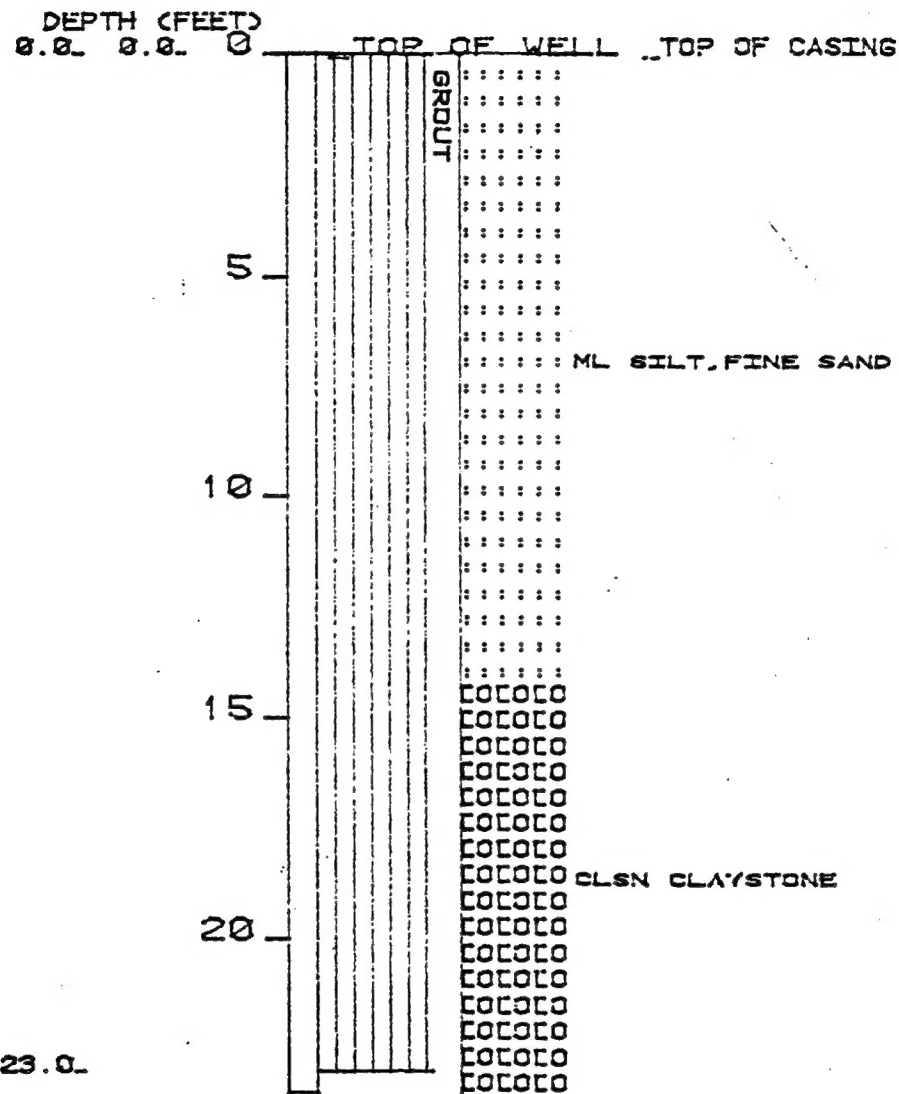


Figure 36-17-2
FIELD BORING PROFILE FOR
BORING 3067

SOURCE: ESE, 1986

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For Rocky Mountain Arsenal
Aberdeen Proving Ground, Maryland

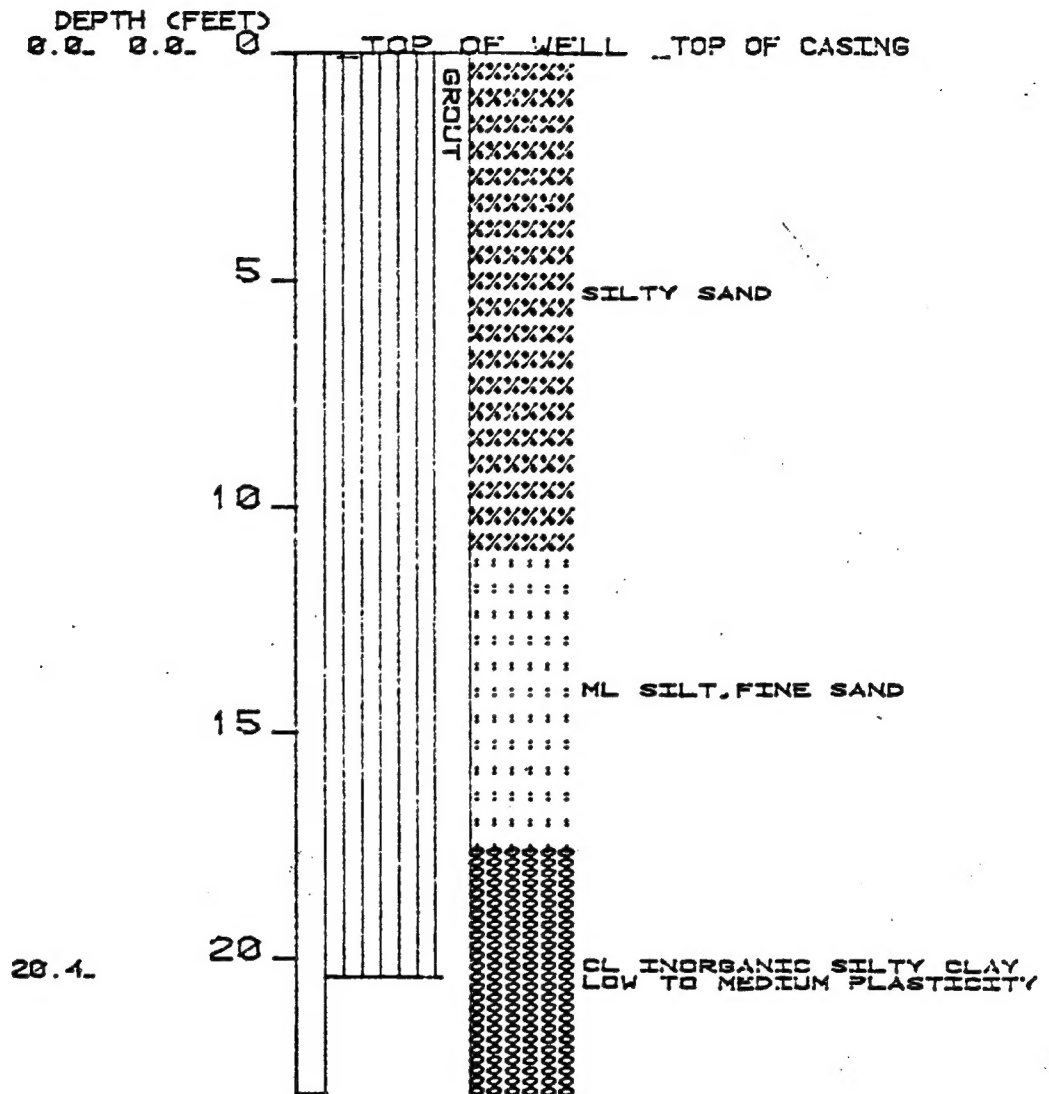


Figure 36-17-3
FIELD BORING PROFILE FOR
BORING 3083

SOURCE: ESE, 1986

Prepared for:
U.S. Army Program Manager's Office
For Rocky Mountain Arsenal
Aberdeen Proving Ground, Maryland

<u>Boring</u>	<u>Depth to Water (ft)</u>	<u>Estimated Ground Water Elevation*</u>
3084 (36-17N)	14.5	5229.0
3090	4.5	5235.0
3092	4.0	5237.5
3093	6.0	5236.0
3094	4.0	5239.0
3095	4.6	5237.0
3097	4.0	5241.0
3098	4.5	5244.0
3099	4.0	5243.5

* Rounded to nearest 0.5 ft

The estimated ground water elevations were determined using unstabilized water levels and the top of boring elevations. The data presented is in general conformance with the projections presented in the Task 1 Technical Plan.

Ponded surface water was observed directly east of Boring 3077 and south of Boring 3076. At the time of drilling there were no signs of the source of this water, however, there is a light northwest trending drainage that enters the area.

2.0 HISTORY

Disposal activity in this area was observed in the first aerial photograph of Section 36, dated 1948. Activity in this source area continued from this date through 1975. On the 1948 photo several disposal activities have been observed. In the northern portion of Source 36-17 a large bare area existed, but only two trenches were visible. In the center of this northern portion of Source 36-17, disturbances showed the existence of eight to twelve trenches. A portion of this area was used for burial of M-17 incendiary devices. The southern portion of this source remained undisturbed with the exception of activity within the Source 36-3 area where insecticides were being disposed.

The 1950 aerial photograph showed no new activity in the southern portion of this source and minimal activity in the northern portion. The site, which appeared to contain most of the trenches in 1948, appeared to be completely disturbed. The central area of the northern portion of Source 36-17 contained four round pits and four irregular dark patches which were former pools or spills.

The 1953 aerial photo showed increased trenching activity in the northern sector. One new pit and fifteen new trenches appeared in the north-northwest portion of this sector. At least two new trenches were added in the central portion of the northern sector of Source 36-17. Two new disturbed areas were also visible in the northern part of the southern sector.

The 1958 photograph showed no new activity in the southern sector, but many new trenches in the northern sector of Source 36-17. At least six new pits and fourteen new trenches appeared mostly concentrated along the western portion of this source, close to the Basin A high water mark. One large pit and several bare spots also appeared in the western portion of Source 36-17. The 1962 photo showed the addition of eleven new trenches and six new pits in Source 36-17N.

The 1975 photo showed new activities occurred in areas already occupied by previous trenches and pits. Therefore, old sites were covered and new ones were cut on a fairly routine basis. In general, half of the new trenches (about 20 trenches and several pits) in Source 36-17N were further east than the trenches apparent in the 1962 photo.

Source 36-9 was used for the testing and disposal of incendiary munitions. These munitions were reportedly ignited on the ground surface and in shallow trenches. Following burning the trenches were backfilled. The 1948 aerial photo shows activity at this site but no new activity was observed from 1950. Source 36-16 was also a primary disposal area for incendiary munitions. Many trenches and pits were observed in aerial photographs from 1948 through 1975.

3.0 EXTENT OF CONTAMINATION

3.1 SOIL

3.1.1 Previous Soils Investigations

This area did not appear to be used for pesticide disposal, based on chemical analysis of soil samples collected under the OTSG Program. Contaminants found in relatively high concentrations were copper, zinc, arsenic, and mercury. No detectable pesticides were found in soils collected from a borehole to a depth of 17 ft. However, this single sample point does not ensure that pesticide disposal did not occur in this source.

3.1.2 Phase I Contamination Survey

3.1.2.1 Phase I Soil Boring Program

The source boundaries of Source 36-17 have been slightly modified as the result of aerial photograph interpretation and field observations resulting in a revised source areal extent of 4,181,000 ft². Based on a borehole spacing of 150 ft, a total of 46 Phase I borings were completed. Boreholes ranged in depth from 5 to 23.5 ft. A borehole location map is presented in Figure 36-17-1a and 36-17-1b.

Prior to commencing drilling operations, all boring locations were cleared in accordance with the surface geophysics program detailed in the Task 1 Technical Plan. A grid, 20 feet on a side was set up at each boring location and gradiometer readings were obtained at a spacing of 5 ft throughout the grid area. These data were used to produce contour plots of the vertical magnetic gradient. Based on the contour plots the boring was relocated elsewhere within the grid or left in its original location. A metal detector was then employed to determine if any metal was present in the near surface soils (0 to 2 ft) within 5 ft of the boring locations. If metal was detected the boring was relocated again and the process repeated until satisfactory results were obtained.

The geophysics program results for Source 36-17S did not indicate the presence of buried metal at any borehole locations. Both the gradiometer survey and metal detector scans were negative for buried metal.

A total of five borings (3065, 3070, 3074, 3075, and 3086) in Source 36-17N were relocated due to potential buried metal identified by the geophysical program. Two boreholes (3065 and 3070) were relocated due to anomalies present (indicative of buried metal) in the magnetic gradient plots (Figures 36-17-4 and 36-17-5). The remaining three borings were relocated due to the metal detector scans. The contour plots of Boreholes 3075, 3083, and 3086, as shown in Figures 36-17-6 to 36-17-8, display anomalies indicative of buried metal. However, these borings did require relocation due to the anomalies, because of their spacial relationship.

The sampling program at Source 36-17 consisted of 99 samples distributed as shown in Table 36-17-1. All samples were obtained using the drill rig and continuous coring method as described in the Task I Technical Plan. As explained therein, predetermined sampling intervals were established every 5 ft beginning with a 0 to 1 ft sample. In some cases field conditions such as obstructions or water table position forced some adjustment in these intervals. Extra samples were taken (Intervals X, Y, or Z) when the soil column exhibited visual anomalies.

The Y interval at Boring 3086, for instance, was taken between the predetermined A and B intervals in an area where the soil column showed visual evidence of residue from burning. The chemical analysis confirmed this was probably the bottom of a burning pit for munitions disposal. All samples were subjected to analysis by GC/MS for semi-volatile organics, an ICP metals screen, and separate analyses for Hg, As, and DBCP. GC/MS analysis for volatile organics was performed on the deeper samples from selected borings.

3.1.2.2 Phase I Geophysical Investigations

Based on the complex disposal history and large areal extent of Source 36-17, a limited Phase I geophysical investigation was performed. The purpose of the investigation was to further define the approximate location and boundaries of the disposal trenches constructed in this source. Due to the lack of existing surficial evidence indicating the location of disposal trenches and pits, geophysical techniques were

Table 36-17-1. Sampling Intervals and Analytical Parameters for
Source 36-17 (Page 1 of 2)

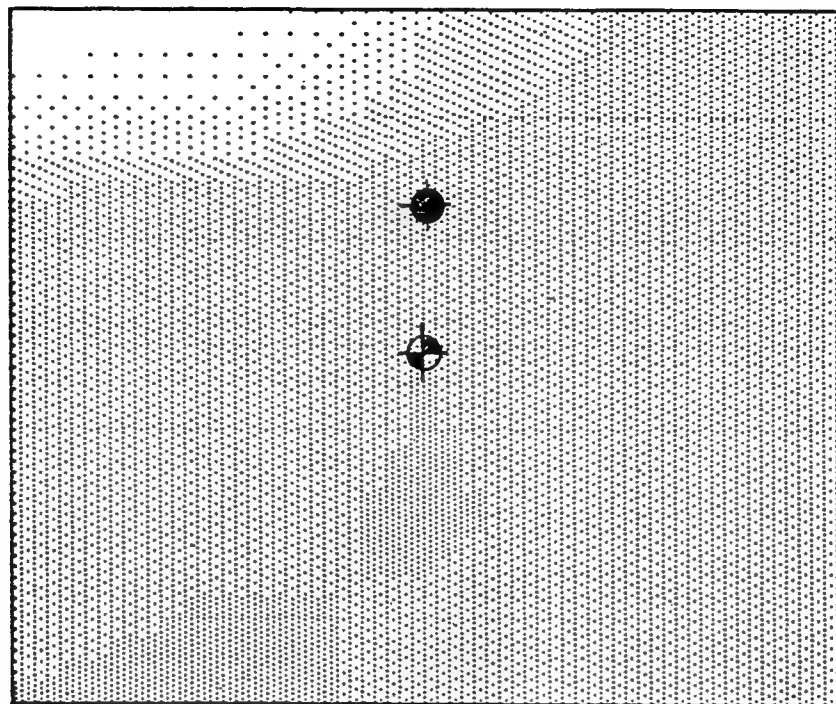
Bore Number	Sample Interval (ft)					Analytical Parameters
	A	B	C	D	E	
3059	0-1	4-5	--	--	--	*
3060	0-1	4-5	--	--	--	*
3061	0-1	4-5	--	--	--	*
3062	0-1	4-5	--	--	--	*
3063	0-1	4-5	--	--	--	*
3064	0-1	4-5	--	--	--	*
3065	0-1	4-5	9-10	12-13(Z)	--	*
3066	0-1	4-5	--	--	--	*
3067	0-1	4-5	9-10	14-15	19-20	*;** (E)
3068	0-1	4-5	--	--	--	*
3069	0-1	4-5	9-10	14-15	--	*
3070	0-1	4-5	--	--	--	*
3071	0-1	4-5	--	--	--	*
3072	0-1	4-5	--	--	--	*
3073	0-1	4-5	--	--	--	*
3074	0-1	4-5	--	--	--	*
3075	0-1	4-5	--	--	--	*
3076	0-1	4-5	--	--	--	*
3077	0-1	4-5	--	--	--	*
3078	0-1	4-5	--	--	--	*
3079	0-1	4-5	--	--	--	*
3080	0-1	4-5	9-10	14-15	--	*;** (C,D)
3081	0-1	4-5	--	--	--	*
3082	0-1	4-5	--	--	--	*
3083	0-1	4-5	9-10	14-15	19-20	*;** (E)
3084	0-1	4-5	9-10	14-15	--	*;** (C,D)
3085	0-1	4-5	--	--	--	*
3086	0-1	4-5	2-3(Y)	--	--	*
3087	0-1	4-5	--	--	--	*

Table 36-17-1. Sampling Intervals and Analytical Parameters for
Source 36-17 (Continued, Page 2 of 2)

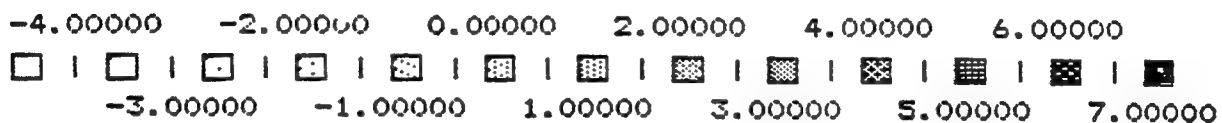
Bore Number	Sample Interval (ft)					Analytical Parameters
	A	B	C	D	E	
3088	0-1	4-5	--	--	--	*
3089	0-1	4-5	--	--	--	*
3091	0-1	4-5	--	--	--	*
3095	0-1	4-5	--	--	--	*
3096	0-1	4-5	--	--	--	*;** (B)
3097	0-1	4-5	--	--	--	*
3098	0-1	4-5	--	--	--	*
3099	0-1	4-5	--	--	--	*
3100	0-1	4-5	--	--	--	*
3101	0-1	4-5	--	--	--	*
3102	0-1	4-5	--	--	--	*
3103	0-1	4-5	--	--	--	*
3104	0-1	4-5	--	--	--	*

* Semi-volatile organics, DBCP, ICP Metals, Arsenic, Mercury
(in all intervals).

** Volatile Organics (in Intervals Indicated Only).



20'



EXPLANATION



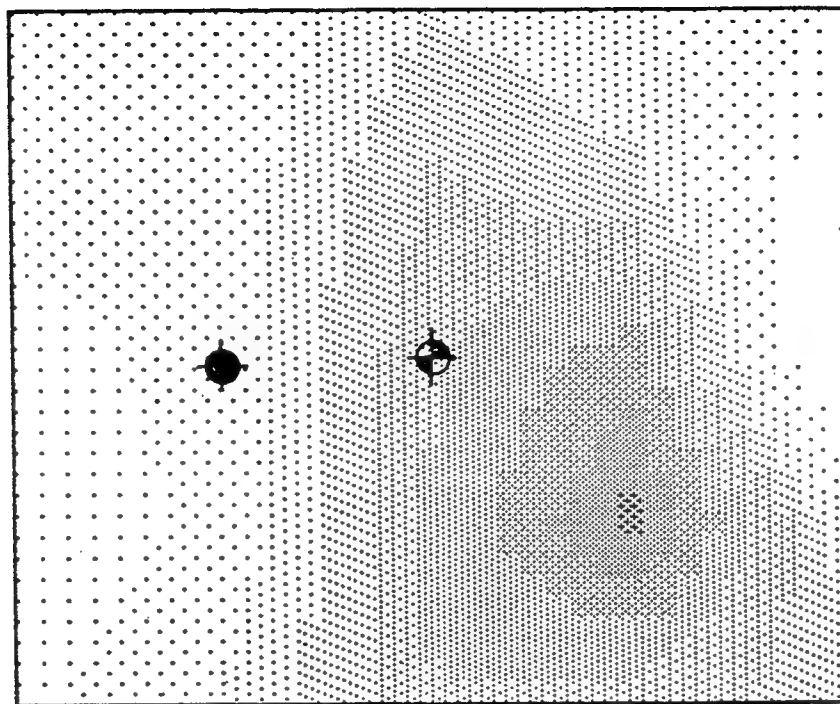
-  Original Boring Location
-  Final Boring Location

Figure 36-17-4
CONTOUR PLOT OF VERTICAL MAGNETIC
GRADIENT BORING 3065

SOURCE: HLA, 1986

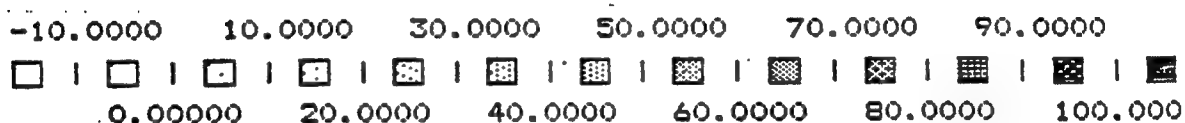
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20'



20'



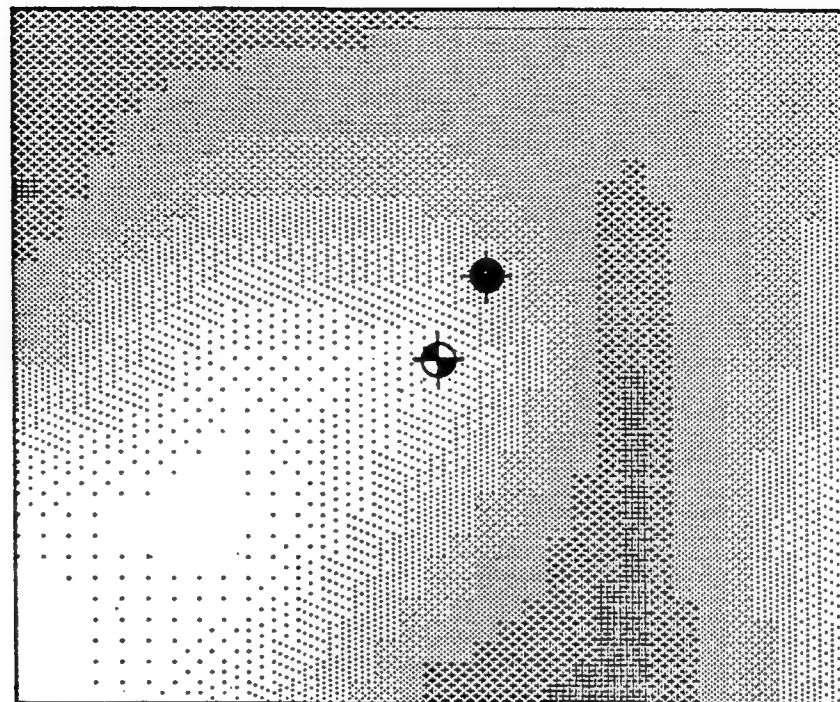
EXPLANATION

- Original Boring Location
- Final Boring Location

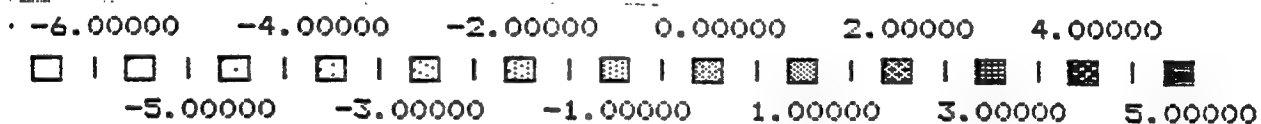
Figure 36-17-5
CONTOUR PLOT OF VERTICAL MAGNETIC
GRADIENT BORING 3070

SOURCE: HLA, 1986

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20'



EXPLANATION



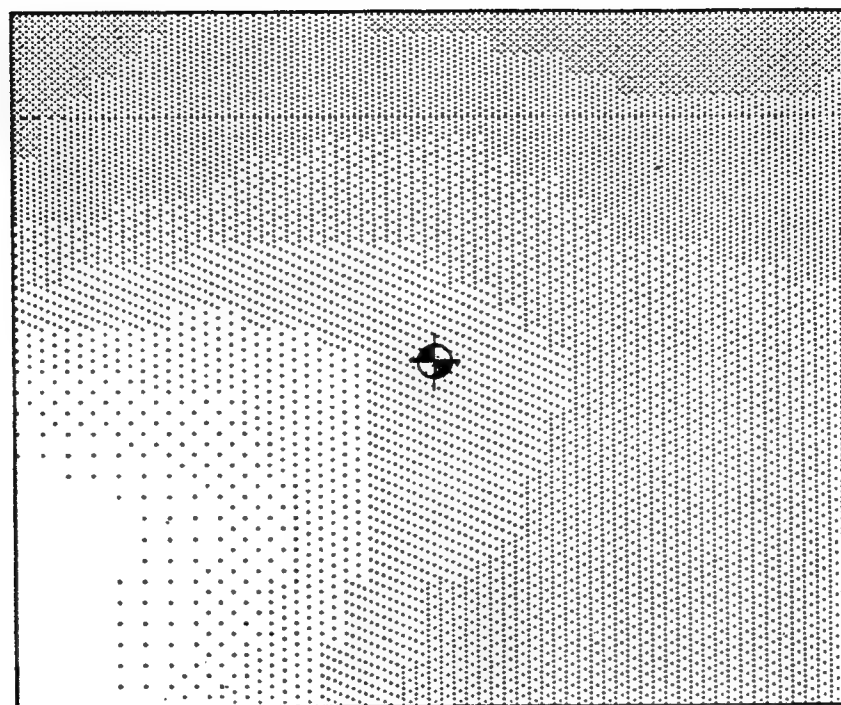
-  Original Boring Location
-  Final Boring Location

Figure 36-17-6
CONTOUR PLOT OF VERTICAL MAGNETIC
GRADIENT BORING 3075

SOURCE: HLA, 1986

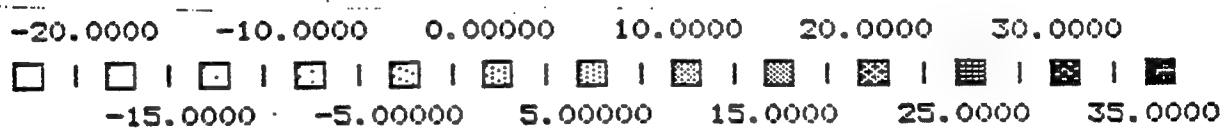
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20'



20'



EXPLANATION



-  Original Boring Location
-  Final Boring Location

Figure 36-17-7
CONTOUR PLOT OF VERTICAL MAGNETIC
GRADIENT BORING 3083

SOURCE: HLA, 1986

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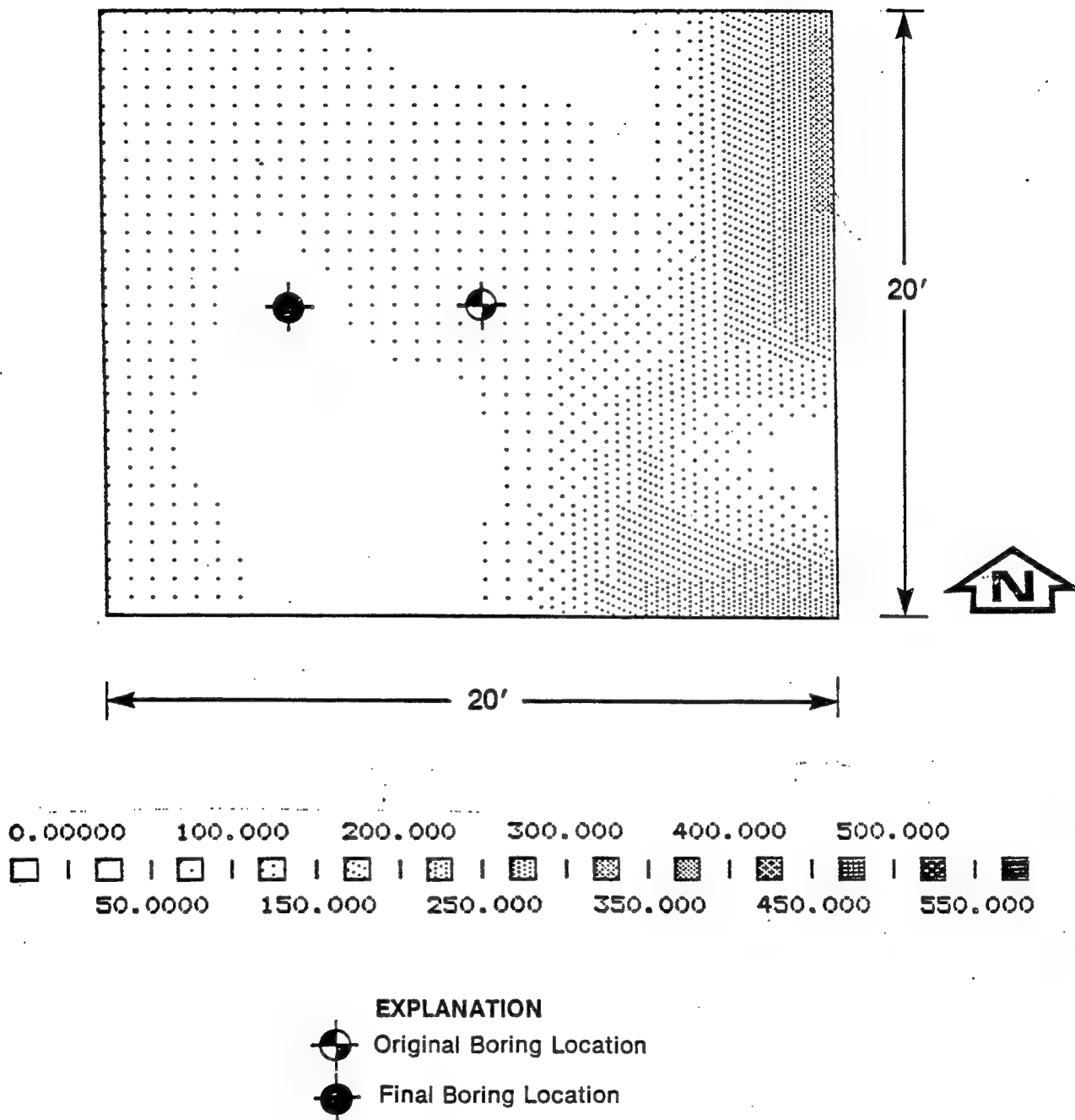


Figure 36-17-8
CONTOUR PLOT OF VERTICAL MAGNETIC
GRADIENT BORING 3086

SOURCE: HLA, 1986

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04/30/86

deemed a more cost and time effective method of locating areas to be further investigated for the Phase II boring program.

The Phase I geophysical investigation was performed over a 500 ft by 200 ft area located at the northern boundary of Source 36-17N. Historical aerial photography indicates that this area was used extensively for disposal activities.

The Phase I geophysical program employed two of the methods used in the Source 36-3 geophysical program. These methods were Electromagnetics (EM) and Vertical Electrical Soundings (VES). Upon consideration of the results of the Source 36-3 investigation and time constraints, it was decided that a magnetometer survey would not be conducted at this time.

EM data was collected along transects spaced at 5 ft intervals throughout the study area. Strip chart recorders were utilized to provide continuous data along each transect. Data was compiled and input into an IBM-PC which generated contour plots of the EM in-phase component (sensitive to ferrous and non-ferrous metal).

A total of four VES soundings were performed within the Source 36-17N geophysical investigation area. VES soundings provide the electrical stratigraphy of the soils at the sounding location.

A detailed discussion of the geophysical methods employed and respective theory are provided in the document titled "Geophysical Investigation of Source 36-3, 36-10 and 36-17".

3.1.2.3 Phase I Field Observations

Portions of the area contained within Source 36-17 are significantly disturbed. There are distinct areas of severe vegetation stress along the boundary between Source 36-17 and Basin A. Also, there is a large barren area immediately south of Source 36-3 which contains numerous small glass bottles and broken glass. This area is surrounded by a small earthen berm approximately 1 ft high.

Trenches are still present in the north-central and southeast areas of Source 36-17N. Boring 3086 penetrated the northern trench and the southern is approximately 100 ft west of Boring 3063. Other indicators of disposal activities in this source include:

- o Large metal tanks (possibly reaction vessels) and dragline buckets are present on the surface 90 ft west of Borehole 3065;
- o A sunken concrete cistern approximately 6 ft deep near Borehole 3083;
- o A large mound of construction debris located near the Basin A boundary in the vicinity of Borehole 3230;
- o A shallow pit with metal debris is present southwest of Borehole 3084; and
- o Surface debris (broken glass, wood and metal fragments, construction debris) scattered about the area.

Air monitoring results varied significantly from Source 36-17N and 36-17S. HNU reading taken in the borehole annulus of Source 36-17N boreholes (3059-3088) ranged from 1 to 14 ppm whereas those taken from Source 36-17S boreholes (3089-3104) ranged from 60 ppm to 500 ppm. Boreholes with readings greater than 50 ppm were: 3089 (500 ppm from 0 to 1 ft, 400 ppm from 1 to 4 ft, 110 ppm from 4 to 5 ft); 3090 (400 ppm from 1 to 4 ft, 90 ppm from 4 to 5 ft); and 3099 (60 ppm from 1 to 4 ft and 4 to 5 ft). No above background readings were obtained in the breathing zone.

Field monitoring for chemical agents was negative at all locations. However, composite samples of Boreholes 3090, 3092, 3093, and 3094 sent to the RMA laboratory for agent screening were positive for mustard. These samples were delivered to RMA personnel for appropriate processing and disposal.

3.1.2.4 Phase I Contaminant Levels and Distribution

The northern portion of Source 36-17 appears to have been used almost exclusively for disposal and destruction of a variety of munitions. These munitions include bursters, bombs, bomblets, incendiary devices, WP grenades, neutralized GB, and other chemical-filled munitions. Organic

contaminants expected in this source area included mustard, GB, Lewisite, and possibly surety materials other than the more common agents. UXO was also expected in some locations.

The history of Source 36-17S is somewhat less clear. The large devegetated area south of Source 36-3 shows evidence of surface or near surface disposal of numerous small glass vials. These could have been from field identification kits or laboratory operations. The area north of Source 36-3 was reportedly used for disposal of materials generated by mustard manufacturing. Anticipated contaminants at this site were pesticides, agents, and possibly UXO.

Analytical data for the Phase I boring program have been tabulated in Appendix 36-17-B. A descriptive summary of these results is presented in Table 36-17-2. Samples containing concentrations above detection limits are tabulated in Table 36-17-3 and significant values are displayed graphically in Figure 36-17-9a and 36-17-9b.

Analysis of Source 36-17 Phase I soil samples indicated the presence of DBCP, organochlorine pesticides, and organosulfur compounds, and elevated arsenic, mercury, and metals concentrations. Organochlorine pesticides observed include aldrin, dieldrin, endrin, DIMP, chlordane, and DBCP. Concentration range from slightly greater than the associated detection limits to some very high levels in isolated areas.

All samples taken from this source were tested for presence of agents by the RMA laboratory which analyzed a composite of each days samples. If positive readings were found, individual samples from each boring were analyzed to identify location. Positive readings for mustard were found in Borings 3900, 3092, 3093, and 3094. Samples from these boring were consequently not analyzed for other constituents.

Compounds which were not part of the target list (unknowns) detected during the Phase I GC/MS analysis are included in the data file presented in Appendix 36-17-B. They are identified only as UNK123, where the three

Table 36-17-2. Summary of Analytical Results for Source 36-17 Analytical Data

Constituent	Number of Samples*	Concentrations (µg/g)				Detection Limit (µg/g)
		Range	Mean	Median	Standard Deviation	
<u>Volatiles</u>						
None Detected						
<u>Semi-Volatiles</u>						
Aldrin	3	1->1000	300	6	600	0.9
Dieldrin	6	0.3->499	80	0.9	200	0.3
Endrin	1	0.9-0.9	--	--	--	0.7
Chlordane	2	60-70	70	70	5	1
P,p'-DDE	1	3-3	--	--	--	0.3
DIMP	5	0.7-4	2	2	2	0.5
PCPMS	1	0.7-0.7	--	--	--	0.3
DBCP	6	0.012-0.44	0.12	0.07	0.16	0.005
<u>Metals</u>						
Cadmium	12	0.70-13	3.3	1.0	4.1	0.9
Chromium	83	7.0-1,400	30	11	160	7.2
Copper	95	5.0-660	21	10	68	4.8
Lead	25	17-7,100	310	23	1,400	17
Zinc	88	24-12,000	200	39	1,300	16
Arsenic	23	4.7-29	10	6.5	7.1	4.7
Mercury	26	0.050-1.2	0.18	0.12	0.24	0.05

* Number of samples in which constituent was detected.

Source: ESE, 1986

Table 36-17N-3. Concentrations of Target Analytes Above Detection Limits in Source 36-17N Soil Samples (Page 1 of 6)

Bore Number	3059A	3059B	3060A	3060B	3061A	3061B	3062A	3062B	3063A	3063B	3064A	3064B	3065A
Depth (ft)	0-1	4-5	0-1	4-5	0-1	4-5	0-1	4-5	0-1	4-5	0-1	4-5	1-2
Geologic Material	Sandy Silt	Silty Sand	Slightly Sandy Silt	Sandy Silt	Sandy Silt	Sandy Silt	Sandy Silt	Sandy Silt	Slightly Sandy Silt	Slightly Sandy Silt	Slightly Sandy Silt	Sandy Silt	Sandy Silt

AIR MONITORING

HNU (ppm)

BKD

BKD

BKD

BKD

BKD

BKD

BKD

BKD

BKD

BKD

BKD

BKD

BKD

BKD

BKD

BKD

SOIL CHEMISTRY

Volatiles (µg/g)

None Detected

Semi-Volatiles (µg/g)

Chlordane

DIMP

Aldrin

Dieldrin

70

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Metals (µg/g)

Cadmium

Chromium

Copper

Lead

Zinc

Arsenic

Mercury

--

16

8

27

57

7.9

0.15

--

10

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32

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14

15

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39

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8

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37

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18

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29

70

6.7

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11

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2.9

10

8

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10

11

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0.17

0.11

0.12

Table 36-17N-3. Concentrations of Target Analytes Above Detection Limits in Source 36-17N Soil Samples (Continued, Page 2 of 6)

Bore Number	3065B	3065C	3065Z	3066A	3066B	3067A	3067B	3067C	3067D	3067E	3068A	3068B	3069A
Depth (ft)	4-5	9-10	12-13	0-1	4-5	0-1	4-5	9-10	14-15	19-20	0-1	4-5	0-1
Geologic Material	Silty Sand	Sandy Silt	Sandy Silt	Sandy Silt	Sandy Silt	Sandy Silt	Sandy Silt	Sandy Silt	Silty Claystone	Silty Claystone	Slightly Sandy Silt	Slightly Sandy Silt	Slightly Sandy Silt

AIR MONITORING

HNU (ppm)	1	1	BKD	BKD	BKD	BKD	BKD	BKD	BKD	BKD	BKD	BKD	BKD
-----------	---	---	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

SOIL CHEMISTRY Volatiles (µg/g)

None Detected

Semi-Volatiles (µg/g)

None Detected

Metals (µg/g)

Cadmium	--	--	--	--	--	--	--	0.7	0.9	1.0	--	--	--
Chromium	11	14	20	10	--	10	10	14	14	15	14	10	9
Copper	10	13	19	12	7	11	9	22	41	46	16	10	8
Lead	--	--	--	--	--	--	--	--	25	22	21	--	--
Zinc	--	37	69	--	--	34	--	51	90	86	44	32	32
Arsenic	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	--	0.17	--	0.12	--	0.09	--	--	--	--	--	--	--

Table 36-17N-3. Concentrations of Target Analytes Above Detection Limits in Source 36-17N Soil Samples (Continued, Page 3 of 6)

Bore Number Depth (ft) Geologic Material	3069B 4-5 Silty Sand	3069C 9-10 Silty Sand	3069D 14-15 Claystone	3070A 0-1 Silty Sand	3070B 4-5 Silty Sand	3071A 0-1 Sandy Silt	3071B 4-5 Silty Sand	3072A 0-1 Silty Sand	3072B 4-5 Silty Sand	3073A 0-1 Sandy Silt	3073B 4-5 Silty Sand	3074A 0-1 Sandy Silt	3074B 4-5 Silty Sand
AIR MONITORING													
HNU (ppm)	BKD	BKD	BKD	BKD	BKD	BKD	BKD	BKD	BKD	BKD	BKD	BKD	BKD
SOIL CHEMISTRY													
Volatiles (µg/g)													
None Detected													
Semi-Volatiles (µg/g)													
Dieldrin	--	--	--	--	--	--	--	--	--	0.3	--	--	--
Metals (µg/g)													
Cadmium	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	9	34	--	11	8	--	14	10	12	--	15	10
Copper	5	8	25	15	9	6	5	13	9	12	13	13	10
Lead	--	--	21	--	--	--	--	--	--	33	--	--	--
Zinc	24	35	69	42	43	28	29	39	--	51	37	42	31
Arsenic	--	6.1	--	4.7	6.5	--	--	--	--	5.1	5.1	--	--
Mercury	--	--	--	--	--	--	0.06	--	--	0.08	0.05	--	--

Table 36-17N-3. Concentrations of Target Analytes Above Detection Limits in Source 36-17N Soil Samples (Continued, Page 4 of 6)

Bore Number Depth (ft) Geologic Material	3075A 0-1 Silty Sand	3075B 4-5 Silty Sand	3076A 0-1 Slightly Sandy Silt	3076B 4-5 Slightly Sandy Silt	3077A 0-1 Slightly Sandy Silt	3077B 4-5 Slightly Sandy Silt	3078A 0-1 Slightly Sandy Silt	3078B 4-5 Slightly Sandy Silt	3079A 0-1 Slightly Sandy Silt	3079B 4-5 Slightly Sandy Silt	3080A 0-1 Sandy Silt	3080B 4-5 Silty Sand
	BKD	BKD	BKD	BKD	BKD	BKD	BKD	BKD	BKD	BKD	BKD	2.6
HNU (ppm)												
SOIL CHEMISTRY												
Volatiles (µg/g)												
None Detected												
Semi-Volatiles (µg/g)												
Dieldrin	--	--	3	--	1	--	--	--	--	--	--	--
Endrin	--	--	0.9	--	--	--	--	--	--	--	--	--
DIMP	--	--	--	2	--	--	--	4	--	--	--	--
Metals (µg/g)												
Cadmium	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	7	8	12	10	9	8	--	8	10	9	--	--
Copper	6	8	30	8	10	6	6	6	8	7	6	6
Lead	--	--	30	--	23	--	--	--	18	--	--	--
Zinc	30	39	60	44	41	32	26	35	38	38	34	30
Arsenic	--	--	27	--	11	11	8.9	--	5.0	--	--	--
Mercury	--	0.07	0.59	0.07	0.20	--	--	--	--	0.23	--	--

Table 36-17N-3. Concentrations of Target Analytes Above Detection Limits in Source 36-17N Soil Samples (Continued, Page 5 of 6)

Bore Number Depth (ft) Geologic Material	3080C 9-10 Silty Sand	3080D 14-15 Claystone	3081A 0-1 Sandy Silt	3081B 4-5 Silty Sand	3082A 0-1 Sandy Silt	3082B 4-5 Silty Sand	3083A 0-1 Silty Sand	3083B 4-5 Silty Sand	3083C 9-10 Silty Sand	3083D 14-15 Sandy Clayey Silt	3083E 19-20 Sandy Clay	3084A 0-1 Sandy Silt	3084B 4-5 Sandy Silt
AIR MONITORING													
HNU (ppm)	BKD	BKD	14	12	1	1.2	BKD	BKD	BKD	BKD	BKD	BKD	BKD
SOIL CHEMISTRY													
Volatiles (µg/g)													
None Detected													
Semi-Volatiles (µg/g)													
DDE	--	--	--	--	--	--	3	--	--	--	--	--	--
Metals (µg/g)													
Cadmium	1.0	--	--	--	--	--	6.9	--	--	--	--	--	--
Chromium	9	--	14	13	--	12	16	14	14	15	12	8	9
Copper	9	36	15	12	5	8	14	13	15	15	22	5	5
Lead	--	18	19	--	--	17	20	--	--	--	--	--	--
Zinc	38	66	39	39	35	48	48	39	44	50	51	27	31
Arsenic	--	--	--	--	--	5.7	--	--	--	--	--	--	--
Mercury	--	0.06	--	--	--	--	0.36	--	--	--	--	--	--

Table 36-17N-3. Concentrations of Target Analytes Above Detection Limits in Source 36-17N Soil Samples (Continued, Page 6 of 6)

Bore Number	3084C	3084D	3085A	3085B	3086A	3086B	3086Y	3087A	3087B	3088A	3088B
Depth (ft)	9-10	14-15	0-1	4-5	0-1	4-5	2-2.5	0-1	4-5	0-1	4-5
Geologic Material	Sandy Silt	Saturated Silty Sand	Slightly Clayey Silt	Sandy Silt	Silty Sand	Silty Sand	Silty Sand	Silty Sand	Silty Sand	Silty Sand	Silty Sand
AIR MONITORING											
HNU (ppm)	BKD	BKD	BKD	BKD	50-100	BKD	BKD	1.2	BKD	BKD	BKD
SOIL CHEMISTRY											
Volatiles (µg/g)											
None Detected											
Semi-Volatiles (µg/g)											
DBCF	--	--	--	--	0.012	0.14	0.11	--	--	--	--
Metals (µg/g)											
Cadmium	--	--	--	--	1.8	13	9.6	--	--	--	--
Chromium	9	--	14	8	15	33	1400	--	8	8	8
Copper	6	5	17	5	27	170	660	6	--	6	5
Lead	--	--	32	--	96	150	7100	--	--	--	--
Zinc	34	36	65	29	112	2500	12,000	27	28	30	31
Arsenic	--	--	7.8	--	--	--	--	--	--	--	--
Mercury	--	--	0.06	--	0.13	1.2	--	--	--	--	--

BKD No readings above ambient background.

-- Below detection limit.

Table 36-17S-3. Concentrations of Target Analytes Above Detection Limits in Source 36-17S Soil Samples (Page 1 of 2)

Bore Number Depth (ft) Geologic Material	3089A	3089B	3091A	3091B	3095A	3095B	3096A	3096B	3097A	3097B	3098A	3098B
	0-1 Slightly Sandy Silt	4-5 Sandy Silt	0-1 Sandy Silt	4-5 Clayey Silt	0-1 Slightly Silty Sand	4-5 Slightly Silty Sand	0-1 Clayey Silt	4-5 Clayey Silt	0-1 Silty Sand	4-5 Saturated Sandy Silt	0-1 Sandy Silt	4-5 Silty Sand
AIR MONITORING												
HNU (ppm)	500	400	BKD	BKD	BKD	BKD	BKD	BKD	BKD	BKD	BKD	BKD
SOIL CHEMISTRY												
Volatiles (µg/g)												
None Detected												
Semi-Volatiles (µg/g)												
Dieldrin	0.7	--	--	--	--	--	--	--	--	0.6	--	--
Chlordane	60	--	--	--	--	--	--	--	--	--	--	--
DIMP	--	0.7	--	--	--	--	--	--	4	--	--	--
DECP	--	--	--	0.031	--	--	--	--	--	--	--	0.013
Aldrin	--	--	--	--	--	--	--	--	--	1	--	--
PCPMS	--	--	--	--	--	--	--	--	--	--	--	--
Metals (µg/g)												
Cadmium	--	--	--	--	0.7	--	--	0.8	--	--	--	--
Chromium	11	14	12	11	15	11	16	18	7	--	10	22
Copper	7	9	8	7	17	13	22	17	7	--	7	8
Lead	--	19	25	--	20	--	--	--	25	--	18	--
Zinc	48	46	44	39	52	41	71	45	62	34	37	43
Arsenic	16	--	--	4.9	21	--	--	29	6.2	--	5.1	5.4
Mercury	0.20	--	0.06	--	0.09	--	--	--	0.13	--	0.07	--

Table 36-17S-3. Concentrations of Target Analytes Above Detection Limits in Source 36-17S Soil Samples (Continued, Page 2 of 2)

Bore Number Depth (ft) Geologic Material	3099A 0-1 Clayey Silt	3099B 4-5 Saturated Clayey Silt	3100A 0-1 Silty Sand	3100B 4-5 Silty Sand	3111A 0-1 Clayey Silt	3101B 4-5 Clayey Silt	3102A 0-1 Silty Sand	3102B 4-5 Clayey Sand	3103A 0-1 Sandy Silt	3103B 4-5 Silty Sand	3104A 0-1 Sandy Silt	3104B 4-5 Silty Sand
AIR MONITORING												
HNU (ppm)	60	90	BKD	BKD	BKD	BKD	BKD	BKD	BKD	BKD	BKD	BKD
SOIL CHEMISTRY												
Volatiles (µg/g)												
None Detected												
Semi-Volatiles (µg/g)												
Dieldrin	--	--	--	--	--	--	--	--	--	--	--	--
Chlordane	--	--	--	--	--	--	--	--	--	--	--	--
DIMP	--	--	--	--	--	--	--	--	--	--	--	--
DBCP	--	0.44	--	--	--	--	--	--	--	--	--	--
Aldrin	--	6	--	--	--	--	--	--	--	--	--	--
PCPMS	--	0.7	--	--	--	--	--	--	--	--	--	--
Metals (µg/g)												
Cadmium	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	14	10	17	16	18	--	9	11	16	15	21	11
Copper	9	7	16	15	10	--	13	11	15	14	17	12
Lead	22	--	--	--	26	--	--	--	--	--	--	--
Zinc	47	36	52	45	60	24	39	--	44	41	59	--
Arsenic	4.8	--	--	--	6.9	--	--	--	--	--	--	--
Mercury	--	--	--	--	--	--	--	--	--	0.16	--	--

BKD No readings above ambient background.

-- Below detection limit.

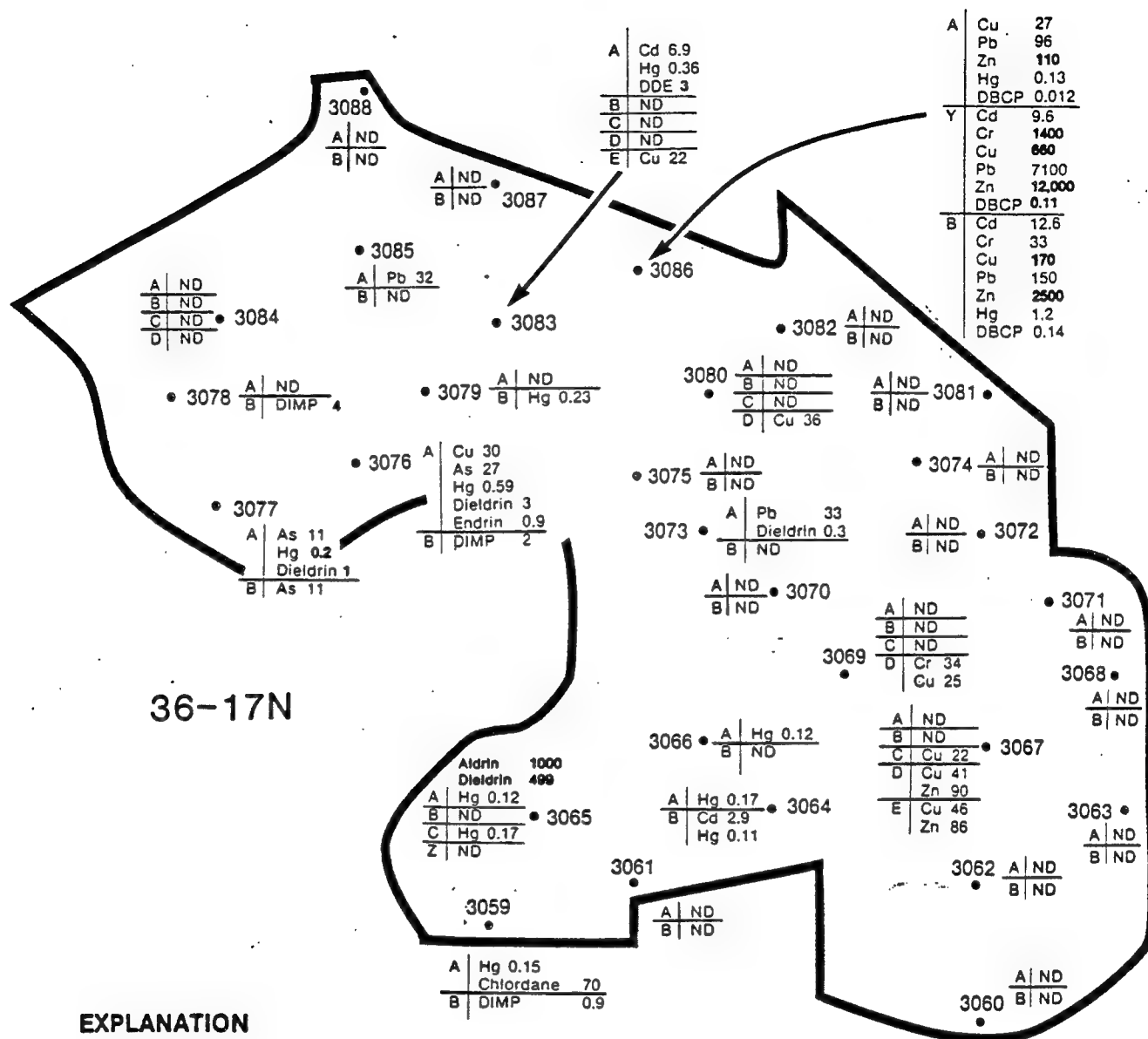


Figure 36-17-9a
SOURCE 36-17S
PHASE I CHEMICAL ANALYSIS
SOURCE: ESE, 1986

Prepared for:
U.S. Army Program Manager's Office
For Rocky Mountain Arsenal
Aberdeen Proving Ground, Maryland

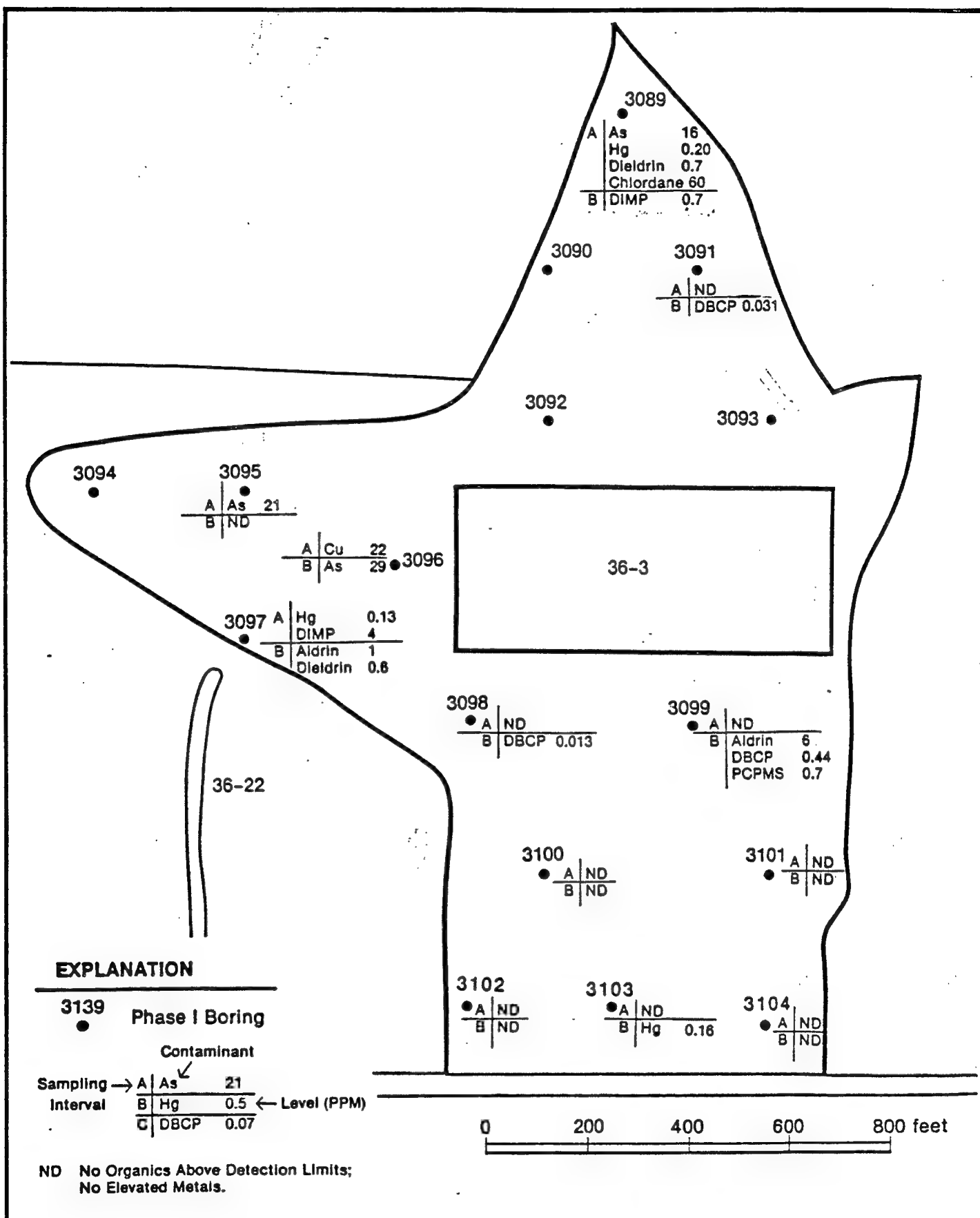


Figure 36-17-9b
SOURCE 36-17S
PHASE I CHEMICAL ANALYSIS
SOURCE: ESE, 1986

Prepared for:
U.S. Army Program Manager's Office
For Rocky Mountain Arsenal
Aberdeen Proving Ground, Maryland

digit number is relative retention time. Library searches were run against the unknowns, and an attempt at positive identification was made as summarized in Table 36-17-4.

3.1.2.4 Phase I Contamination Assessment

The pattern of contamination observed at Source 36-17N is generally consistent with the reported history as a trench disposal area. Many of the Phase I borings encountered little or no evidence of contamination. All borings east of a line between 3073 and 3066 were free of significant contamination. This could indicate the area was not used for trench disposal. However, the data for 3086 and surrounding areas indicates this conclusion would be premature. Boring 3186 exhibited visual staining in the column, and the chemical results show the highest levels of metals found in Section 36, in addition to some DBCP. The surrounding holes exhibit little evidence of contamination. This pattern illustrates that contamination within Source 36-17 is severe in isolated areas, but large portions of the area are probably uncontaminated.

The deeper intervals of Borings 3067 and 3069 exhibit Cr, Cu, and Zn concentrations slightly above those seen elsewhere. These levels are within the indicator ranges used as representative of natural variations. This is regarded as indicative of the phenomenon discussed in the Executive Summary of elevated metals levels in shales. These deeper borings penetrated the Denver Formation, which has exhibited similar metals levels in other sources (Source 36-12).

The portion of Source 36-17N adjacent to Basin A exhibits a pattern of pesticide contamination not seen in the remainder of the area. Pesticides including dieldrin, endrin, and DIMP are prevalent in Borings 3077 and 3076, as they are in the adjacent Boring 3233 in Basin A. This would suggest a particular source of contamination in this area. DIMP is not commonly found elsewhere in Basin A or Source 36-17N.

Table 36-17-4. Tentative Identification of Non-Target Compounds in Source 36-17. (Page 1 of 9)

Borehole Number	Interval Depth (ft)	Unknown Number	Concentration (ppm)	Sample Number	Lot	Best Fit*	Phase II Analysis Required	Comments*
3059	0-1	609	0.9	505600	BIB	No match found	N	No positive identification
		611	5			No good library match found	N	No positive identification
		612	0.7			No good library match found	N	No positive identification
		614	2			No good library match found	N	No positive identification
		619	0.6			B-p-Ts coelocite	N	No positive identification
3059	4-5	523	0.4	505601	BIB	Phthalate	N	In blank
		634	0.3			Phthalate	N	Plasticizer
		637	0.7			Phthalate	N	Plasticizer
		654	0.4				N	Plasticizer
							N	
3060	0-1	608	0.3	505606	MEK	Hexadecanoic acid	N	Naturally occurring
		615	1			Alkene hydrocarbon	N	Oil
3060	4-5	614	1	505607	MEK	Dibutyl nonanoate	N	Naturally occurring
3061	0-1	523	0.3	505612	BIB	Octadecanol	N	In blank
		614	0.9			Octadecenal	N	In blank
		631	0.4			Phthalate	N	By-product
		633	0.4			Dihexyl phthalate	N	Plasticizer
		636	0.7				N	Plasticizer
							N	
3061	4-5	523	0.3	505613	BIB	Phthalate	N	In blank
		634	0.4			Phthalate	N	Plasticizer
		637	0.9			Phthalate	N	Plasticizer
		641	0.3			Phthalate	N	Plasticizer
		654	0.4				N	Plasticizer
							N	
3062	0-1	542	1	505618	MEJ	1,3 Butanediol	N	Naturally occurring
		579	0.4			Isobutyl butenedioate	N	Naturally occurring
		609	1			Hexadecanoic acid	N	Oil, No positive identification
		633	0.5			Hydrocarbon unknown	N	Oil, No positive identification
		634	0.3			Unknown hydrocarbon	N	
							N	
3062	4-5	542	1	505619	MEJ	1,3 butanediol	N	No positive identification
		544	0.3			Unknown	N	Naturally occurring
		579	2			Isobutyl butenedioate	N	Naturally occurring
		609	3			Hexadecanoic acid	N	Oil, No positive identification
		633	2			Alkene hydrocarbon C ₁₈ or higher	N	
3063	0-1	608	0.3	505624	MEK	Hexadecanoic acid	N	Naturally occurring
		633	0.6			Alkene hydrocarbon	N	Oil, No positive identification

Table 36-17-4. Tentative Identification of Non-Target Compounds in Source 36-17. (Continued, Page 2 of 9)

Borehole Number	Interval Depth (ft)	Unknown Number	Concentration (ppm)	Sample Number	Lot	Best Fit*	Phase II Analysis Required	Comments*
3063	4-5	614 635	0.8 2	505625	MEK	Dibutyl nonanoate Bis (2-ethyl hexyl) Phthalate	N N	Naturally occurring Plasticizer
3064	0-1	542 579 609 629	0.3 0.3 0.3 2	505630	MEJ	1,3, butanediol Isobutyl butenedioate Hexadecanoic acid Dioctyl adipate	N N N N	Naturally occurring Naturally occurring Naturally occurring
3064	4-5	542 579 609 633	0.9 0.4 0.5 0.3	505631	MEJ	1,3 butanediol Isobutyl butenedioate Hexadecanoic acid Alkene hydrocarbon	N N N N	Naturally occurring Naturally occurring Oil, No positive identification
3065	0-1	596 601 604 606 612 613 617 621 622 633	20 20 20 20 10 20 40 100 20 10	505636	MEJ	Pentachlorooctahydromethano- cyclopropentadiene Chlorinated unknown Unknown Chlorinated unknown Unknown Chlorinated unknown Chlorinated unknown Chlorinated unknown Unknown Chlorinated unknown		
3065	4-5	542 579 604 621 629	2 0.5 1 0.5 3	505637	MEJ	1,3 butanediol Isobutyl butenedioate Unknown Unknown organophosphate Dioctyl adipate	N N N N	Naturally occurring No positive identification Naturally occurring
3065	9-10	542 579 609 632	2 0.5 0.4 0.4	505638	MEJ	1,3 butanediol Isobutyl butenedioate Hexadecanoic acid Alkene hydrocarbon	N N N N	Naturally occurring Naturally occurring Oil, No positive identification
3065	12-13	614 629	0.5 1	505672	MEK	Dibutyl nonanoate Dioctyl adipate	N N	Naturally occurring Naturally occurring
3066	0-1	542 579 633	0.9 0.5 0.3	505642	MEJ	1,3 butanediol Isobutyl butenedioate Alkyl hydrocarbon	N N N	Naturally occurring Oil, No positive identification

Table 36-17-4. Tentative Identification of Non-Target Compounds in Source 36-17 (Continued, Page 3 of 9)

Borehole Number	Interval Depth (ft)	Unknown Number	Concentration (ppm)	Sample Number	Lot	Best Fit*	Phase II Analysis Required	Comments*
3066	4-5	542 579 609 633	1 1 0.3 1	505643	MEJ	1,3 butanediol Isobutyl butenedioate Hexadecanoic acid Alkyl hydrocarbon	N N N	Naturally occurring Naturally occurring Oil, No positive identification
3067	0-1	542 579 609 633	2 0.5 0.4 0.7	505648	MEJ	1,3 butanediol Isobutyl butenediol Hexadecanoic acid Alkyl hydrocarbon	N N N	Naturally occurring Naturally occurring Oil, No positive identification
3067	4-5	542 579 609 633	1 0.5 0.3 0.6	505649	MEJ	1,3 butanediol Isobutyl butenedioate Hexadecanoic acid Alkyl hydrocarbon	N N N	Naturally occurring Naturally occurring Oil, No positive identification
3067	9-10	602 608 614 633 635	0.6 0.6 6 0.8 1	505650	MEK	Unknown Hexadecanoic acid Dibutyl nonanoate Alkene hydrocarbon Bis (2-ethyl hexyl) Phthalate	N N N N N	No positive identification Naturally occurring Naturally occurring Oil, No positive identification Plasticizer
3067	14-15			505651			N	None detected
3067	19-20	614 633	0.8 0.5	505652	MEK	Dibutyl nonanoate Alkene hydrocarbon	N N	Naturally occurring Oil, No positive identification
3068	0-1	579 608	0.2 0.3	505654	MEK	Diisobutyl butenoate Hexadecanoic acid	N N	Naturally occurring Naturally occurring
3068	4-5	614 635	0.5 0.6	505655	MEK	Dibutyl nonanoate Bis (2 ethyl hexyl) Phthalate	N N	Naturally occurring Plasticizer
3069	0-1	530 542 554 555	5 1 1 9	505660	BIC	Tetrachloroethane No good library match No good library match No match found	N N N N	Lab contaminant No positive identification No positive identification No positive identification
3069	4-5	614 614	6 2	505661	BIC	Octadecenyloxy ethanol Octadecanol	N N	In blank In blank
3069	9-10	530 555 614	2 3 2	505662		Tetrachloroethane No library match found	N N N	Lab contaminant No positive identification In blank

Table 36-17-4. Tentative Identification of Non-Target Compounds in Source 36-17. (Continued, Page 4 of 9)

Borehole Number	Interval Depth (ft)	Unknown Number	Concentration (ppm)	Sample Number	Lot	Best Fit*	Phase II Analysis Required	Comments*
3069	14-15	544 614	1 2	505663	BIC	1,3-dichlorobenzene-d4	N N	Surrogate In blank
3070	0-1	614	2	505666			N	In blank
3070	4-5			505667			N	None detected
3071	0-1	513 530 555 614	0.8 6 10 14	505700	BIC	Trichloroethane (1,1,2) Tetrachloroethane No library match found	N N N N	Lab contaminant Lab contaminant No positive identification In blank
3071	4-5	614	2.0	505701	BIC	Dibutyl nonanedioate	N	Naturally occurring
3072	0-1	633	0.4	505706	MEL	Alkyl hydrocarbon	N	Oil, No positive identification
		635	0.9			Bis (2-ethyl hexyl) Phthalate	N	Plasticizer
3072	4-5	631	0.6	505707	MEL	Dioctyl adipate	N	Naturally occurring
3073	0-1	567 575 614 618 619	0.9 1 1 1 3.0	505712	BID	Tetradecane Heptadecane Octadecenoic acid Octadecanoic acid	N N N N N	Hydrocarbon aliphatic Hydrocarbon aliphatic In blank Naturally occurring Naturally occurring
3073	4-5	523	2	505713	BID		N	In blank
3074	0-1	542 629 635	0.2 2 0.3	505718	MEL	1,3 butanediol Dioctyl adipate Bis (2 ethyl-hexyl) phthalate	N N N	Naturally Occurring Plasticizer
3074	4-5	635	0.7	505719	MEL	Bis (2 ethyl hexyl) phthalate	N	Plasticizer
3075	0-1	523	1	505724	BID		N	In blank
3075	4-5			505725			N	None detected
3076	0-1			505730			N	None detected
3076	4-5			505731			N	None detected
3077	0-1	614	4	505736	BIE	Dibutyl nonanedioate	N	Naturally occurring
3077	4-5		1	505737			N	None detected
3078	0-1	614	1	505742	BID	Dibutyl nonanedioate	N	Naturally occurring

Table 36-17-4. Tentative Identification of Non-Target Compounds in Source 36-17. (Continued, Page 5 of 9)

Borehole Number	Interval Depth (ft)	Unknown Number	Concentration (ppm)	Sample Number	Lot	Best Fit*	Phase II Analysis Required	Comments*
3078	4-5	637	8	505743	BID	Bis (2-ethyl hexyl) phthalate	N	Plasticizer
3079	0-1	538	1	505748	BIE	Dimethoxymethane		Solvent
3079	4-5			505749			N	None detected
3080	0-1	614	3.0	505754	BIG		N	In blank
3080	4-5			505755			N	None detected
3080	9-10			505756			N	None detected
3080	14-15	614	3	505757	BIG		N	In blank
3081	0-1	633	0.3	505760	MEL	Alkene	N	Oil, No positive identification
		635	0.4			Bis (2-ethyl hexyl) phthalate	N	Plasticizer
3082	0-1	609	1	505766	BIG	Dibutyl phthalate	N	Plasticizer
		614	10			Octadecanol	N	In blank
		614	4					
3082	4-5	614	20	505767	BIG	Octadecanol	N	In blank
		614	5					
3083	0-1	576	1	505800	MEL	Hydrocarbon C ₁₄	N	Oil, No positive identification
		580	0.9			Hydrocarbon	N	Oil, No positive identification
		582	1			Hydrocarbon	N	Oil, No positive identification
		620	3			C ₁₄ H ₂₈ Cl ₁₄	N	Isomer of DDE
		635	1			Bis (2-ethyl hexyl) phthalate	N	Plasticizer
3083	4-5	589	8	505801	MEM	Diethyl phthalate	N	Plasticizer
		632	0.2			17-Pentatriacontene	N	Oil
		635	1			Bis (2-ethyl hexyl) phthalate	N	Plasticizer
3083	9-10	635	0.6	505802	MEM	Bis (2-ethyl hexyl) phthalate	N	Plasticizer
3083	14-15	579	0.2	505803	MEM	Isobutyl butenoate	N	Naturally occurring
		589	10			Diethyl phthalate	N	Plasticizer
		614	0.8			Dibutyl nonandioate	N	Naturally occurring
		632	0.5			Eicosene	N	Oil
		635	9			Bis (2-ethyl hexyl) Phthalate	N	Plasticizer

Table 36-17-4. Tentative Identification of Non-Target Compounds in Source 36-17. (Continued, Page 6 of 9)

Borehole Number	Interval Depth (ft)	Unknown Number	Concentration (ppm)	Sample Number	Lot	Best Fit*	Phase II Analysis Required	Comments*
3083	19-20	614 629 632 635	0.4 0.4 0.4 10	505804	MEM	Dibutyl nonanedioate Di-n-octyl adipate Alkene hydrocarbon Bis (2-ethyl hexyl) phthalate	N N N N	Naturally occurring Naturally occurring Oil Plasticizer
3084	0-1			505806			N	None detected
3084	4-5	523	1	505807	BID		N	In blank
3084	9-10	513 614	0.9 2	505808	BID	Toluene Dibutyl nonanedioate	N	Solvent Naturally occurring
3084	14-15	513 639	1 5	505809	BID	Toluene Bis (2-ethyl hexyl) phthalate	N	Solvent Plasticizer
3085	0-1	614	2	505812	BID		N	In blank
3085	4-5			505813			N	None detected
3086	0-1	577 578 589 623 635	2 1 10 0.7 2	505818	MEM	Trichloro aniline Trichlorinated unknown Diethyl phthalate Chlorinated unknown Bis (2-ethyl hexyl) phthalate	N N N N	Plasticizer Plasticizer Plasticizer
3086	2-3	524 562 567 569 574 576 580 582 588 591 594 595 600	600 200 200 200 300 300 300 300 400 200 300 200 100	505872	MEM	Tetrachloroethane C13 alkane C14 alkane C13 alkane C15 alkane C14 alkane Unknown alkane C15 alkane C16 alkane Unknown alkane C17 alkane Unknown alkane Unknown alkane		Oil Oil Oil Oil Oil Oil Oil Oil Oil Oil Oil Oil Oil
3086	4-5	525 562 567 569 574 576 580 582 588	1000 90 90 70 100 80 100 100 100	505818	MEM	Tetrachloroethane C13 alkane Unknown alkane Unknown alkane C15 alkane C14 alkane Unknown alkane C15 alkane Unknown alkane + diethyl phthalate		Oil Oil Oil Oil Oil Oil Oil Plasticizer

Table 36-17-4. Tentative Identification of Non-Target Compounds in Source 36-17. (Continued, Page 7 of 9)

Borehole Number	Interval Depth (ft)	Unknown Number	Concentration (ppm)	Sample Number	Lot	Best Fit*	Phase II Analysis Required	Comments*
3087	0-1	591	90	505824	BID	Unknown alkane	N	Oil
		594	40			C17 alkane		Oil
		595	100			Unknown alkane		Oil
		600	70			C14 alkane		Oil
		605	40			Unknown alkane		Oil
		609	30			Dibutyl phthalate		Plasticizer
3088	0-1	635	70	505830	BID	Bis (2-ethyl hexyl) phthalate	N	Plasticizer
		637	10			di-n-Octylphthalate-d4		Surrogate
		523	2					In blank
		523 614	2 1			Methyl octyne		In blank
3089	0-1	614	1	505831	BIB	Bis (2-ethyl hexyl) Phthalate	N	In blank
		638	2.0					Plasticizer
		609	1					No positive identification
		612	0.7					No positive identification
3089	4-5	614	1	505837	BIB	Octadecanol	N	In blank
		615	2			No good library match found		No positive identification
		637	0.8			Phthalate		Plasticizer
		523	0.6			Similar to 2,7-dimethyl-3,6-dimethylene-1,7-octadiene		In blank
		579	0.7			Methyl-tricyclooctene carboxylate and Methyl benzene propanoate		No positive identification
		585	0.6			Phthalate		Plasticizer
3091	0-1	636	0.7	505848	BIB	Phthalate	N	Plasticizer
		660	0.4			Phthalate		Plasticizer
		523	0.3			Cyclohexenone		In blank
		532	0.3			Octadecenoic acid		Solvent
		618	0.4			Phthalate		Naturally occurring
		633	0.3			Diheptyl phthalate		Plasticizer
3091	4-5	636	0.6	505849	BIB		N	Plasticizer
		523	0.3			Similar to 2,7-dimethyl-3,6-dimethylene-1,7-octadiene		In blank
		579	0.4			Similar to UNK 579, lower intensities		No positive identification
		585	0.5			Phthalate		No positive identification
		633	0.4			Diheptyl phthalate		Plasticizer
		636	0.7					Plasticizer

Table 36-1. Tentative Identification of Non-Target Compounds in Source 36- (Continued, Page 8 of 9)

Borehole Number	Interval Depth (ft)	Unknown Number	Concentration (ppm)	Sample Number	Lot	Best Fit*	Phase II Analysis Required	Comments*
3095	0-1	579 609 629 633	0.3 0.3 0.2 0.3	505900	MEN	Diisobutyl butenediol Hexadecanoic acid Diethyl adipate Alkene	N N N N	Naturally occurring Naturally occurring Naturally occurring Oil, No positive identification
3095	4-5	604	1	505901	MEN	Diisobutyl phthalate	N	Plasticizer
3096	0-1	629	1	505906	MEN	Diethyl adipate	N	Naturally occurring
3096	4-5	635	2	505907	MEN	Bis (2-ethyl hexyl) phthalate	N	Plasticizer
3097	0-1	614	1	505912	BIE	Octadecanol	N	In blank
3097	4-5	538 610 614	2 1 1	505913	BIE	Dimethoxy methane		Solvent
3098	0-1			505918			N	None detected
3098	4-5			505919			N	None detected
3099	0-1	523 636 641 654	0.8 1 0.4 0.6	505924	BIA	Diheptyl phthalate Phthalate Phthalate	N N N N	In blank Plasticizer Plasticizer Plasticizer
3099	4-5	523 547 547 636	1 2 9 1	505925	BIA	Alpha-methyl-benzene methanol 1-phenyl-ethanone Diheptyl phthalate	N N	In blank Plasticizer
3100	0-1	542 593 609 632 635	10 2 7 2 2	505930	MEI	1,3 butanediol Methoxy unknown Diethyl phthalate Alkene hydrocarbon Bis (2-ethyl hexyl) phthalate	N N N N N	No positive identification Plasticizer Oil, No positive identification Plasticizer
3100	4-5	544 579 608 632 635	2 1 1 5 1	505931	MEI	1,3 butanediol Diisobutyl butenoate Hexadecanoic acid Alkene hydrocarbon Bis (2-ethyl hexyl) phthalate	N N N N N	Naturally occurring Naturally occurring Oil, No positive identification Plasticizer
3101	0-1	513 636	2 1	505936	BIA	Toluene Diheptyl phthalate	N	Plasticizer

4. Tentative Identification of Non-Target Compounds in Source

Borehole Number	Interval Depth (ft)	Unknown Number	Concentration (ppm)	Sample Number	Lot	Best Fit*	Phase II Analysis Required	Comments*
3101	4-5	637	3	505937	BIA	Bis (2-ethyl hexyl) phthalate	N	Plasticizer
		654	0.6			Phthalate	N	Plasticizer
		523	1			Cyclohexenol	N	In blank
		527	0.5			Diheptyl phthalate Phthalate	N	Solvent
		532	0.9				N	In blank
		636	0.7				N	Plasticizer
3102	0-1	654	0.3	505942	MEI	Diisobutyl butenoate Diisobutyl phthalate Di-n-butyl phthalate Alkene hydrocarbon	N	Plasticizer
		579	0.7				N	Naturally occurring
		604	3				N	Plasticizer
		609	1				N	Plasticizer
		632	2				N	Oil, No positive identification
		635	7				N	Plasticizer
3102	4-5	542	0.4	505943	MEI	1,3 butanediol	N	Naturally occurring
		579	1			Diisobutyl butenoate	N	Naturally occurring
		608	0.3			Hexadecanoic acid	N	Oil, No positive identification
		632	1			Alkene hydrocarbon	N	Plasticizer
		635	3			Bis (2 ethyl hexyl) phthalate	N	
		3103	0-1			546	2	505948
579	0.7			Diisobutyl butenoate	N	Naturally occurring		
608	0.7			Hexadecanoic acid	N	Plasticizer		
609	1			Dibutyl Phthalate	N	Oil, No positive identification		
632	2			Alkene hydrocarbon	N			
635	3			Bis (2 ethyl hexyl) phthalate	N			
3103	4-5	542	2	505949	MEI	1,3 butanediol	N	Naturally occurring
		608	0.9			Hexadecanoic acid	N	Oil, No positive identification
		633	1			Alkene hydrocarbon	N	Plasticizer
		635	3			Bis (2-ethyl hexyl) phthalate	N	No positive identification
		634	0.5			Unknown	N	
		3104	0-1			543	0.1	505954
579	0.5			Diisobutyl butenoate	N	Naturally occurring		
608	0.8			Hexadecanoic acid	N	Oil, No positive identification		
632	1			Alkene hydrocarbon	N	Plasticizer		
635	6			Bis (2-ethyl hexyl) phthalate	N			
3104	4-5			548	3	505955	MEI	
		579	0.4	Diisobutyl butenoate	N			Naturally occurring
		608	0.8	Hexadecanoic acid	N			Oil, No positive identification
		632	1	B-alkene hydrocarbon	N			Plasticizer
		635	0.8	Bis (2-ethyl hexyl) Phthalate	N			

The southwestern corner of Source 36-17N exhibits an unusual pattern, which is also found in the northern dip of Source 36-17S (Boring 3089). Very high levels of chlordane are found in this area, in addition to dieldrin, endrin, and DIMP. Historical records show Army Source 36-16 in this area, a reported munitions disposal area. This may explain the metals found in Boring 3202 in Basin A, but does not explain the pesticides. The chemical data would indicate the many trenches and pits observed in this area were likely used for pesticide disposal. The vertical stratification of this contamination would seem to indicate surface rather than trench disposal. The metals and chlordane are only found in the surface interval. However, the 4 to 5 foot samples contained DIMP and DBCP. This may be due to weathering or migration, but could also indicate a combination of disposal methods.

Most of the data in the northern half of Source 36-17S was lost due to presence of mustard in Borings 3090, 3092, 3093, and 3094. This precluded further analysis of samples from these holes. Borings 3213, 3214, and 3215, adjacent to Source 36-17S in Basin A, show DBCP and DIMP contamination. This suggests a possible link to Source 36-17, as these compounds are not found further west in Basin A.

The central portion of Source 36-17S shows some moderate levels of arsenic in addition to pesticides. The area just south of 3603 shows fairly high levels of DBCP, PCPMS, and aldrin. This would indicate that the broken vials found in this area may have contained pesticides. South of a line between borings 3100 and 3101, Source 36-17S appears uncontaminated. This is consistent with the lack of observed disturbances in this area.

The Phase I geophysical investigation of Source 36-17N was designed to provide more information as to the location, orientation, and dimensions of disposal trenches or pits. The EM data was contoured and interpreted to define trench or pit boundaries. The positions of large negative EM anomalies or troughs were interpreted to indicate the presence of a metal bearing trench or pit.

The Phase I geophysical survey resulted in the identification of four anomalies representative of disposal trenches or pits. In addition, the survey also resulted in the identification of an anomaly suggestive of a buried pipeline. Comparison of RMA Contaminant Source Maps and Plate 10 (Geophysical Investigation of Source 36-3, 36-10, and 36-17, 1986) indicates that this line is very likely the cast iron chemical pipeline originating in the North Plants and terminating at Basin A.

As no Phase I borings were constructed thru or adjacent to these anomalies the existence of these trenches and/or soil contamination has not been verified. The Phase II soil boring program will include borings in these areas to provide the requisite verifications.

Results of the VES soundings do not indicate anomalous data suggestive of grossly contaminated soils. However, they do suggest that if soil contamination does exist within the study area it is confined to an area near the existing excavation.

Ground water analytical data for the period of 1976 through 1985 were retrieved from the USATHAMA RMA data base and reviewed. The most recent analyses from each well were selected for inclusion in this report. See Figures 36-17-10a and 36-17-10b and Table 36-17-5a and 36-17-5b. In some cases, less recent data were included in order to allow comparison between two or more wells. The data have been annotated to indicate whether one or more analyses are available for each well over the period investigated, and whether target compounds were detected in determinations not included in this report. Although these data are limited in nature, they do provide additional insight regarding the interrelationship between vadose and phreatic zone contamination in the vicinity of Source 36-17.

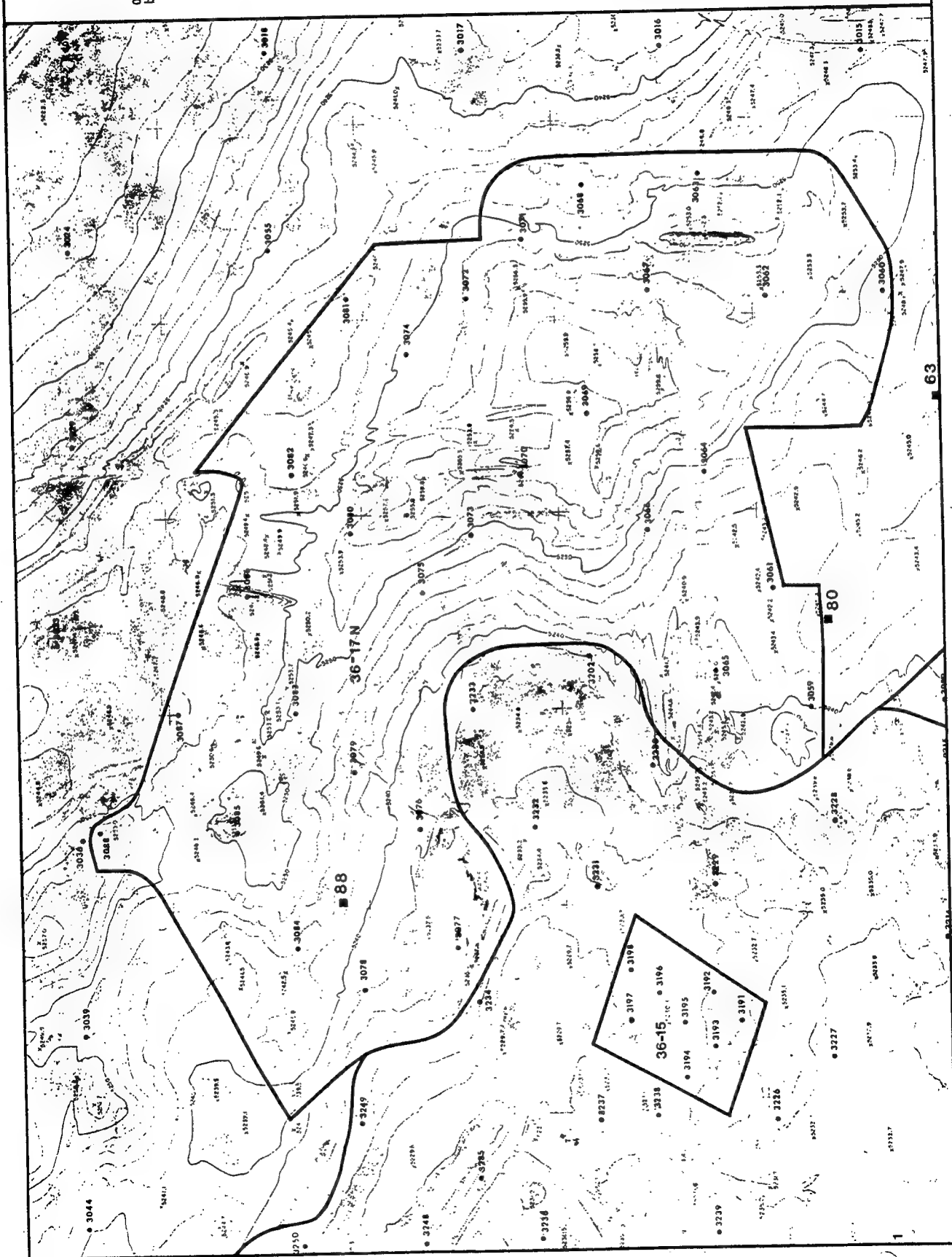
The existing well distribution in the vicinity of Source 36-17 is suitable for an evaluation of upgradient and downgradient conditions in the alluvial aquifer, however, the parameter suits and sampling dates do not permit such an analysis in most cases. The ground water analytical



EXPLANATION
■ Monitoring Wells

Figure 36-17-10a
LOCATION OF SELECTED
MONITORING WELLS IN
THE VICINITY OF
SOURCE 36-17N

Prepared for:
U.S. Army Program Manager's Office
For Rocky Mountain Arsenal
Aberdeen Proving Ground, Maryland



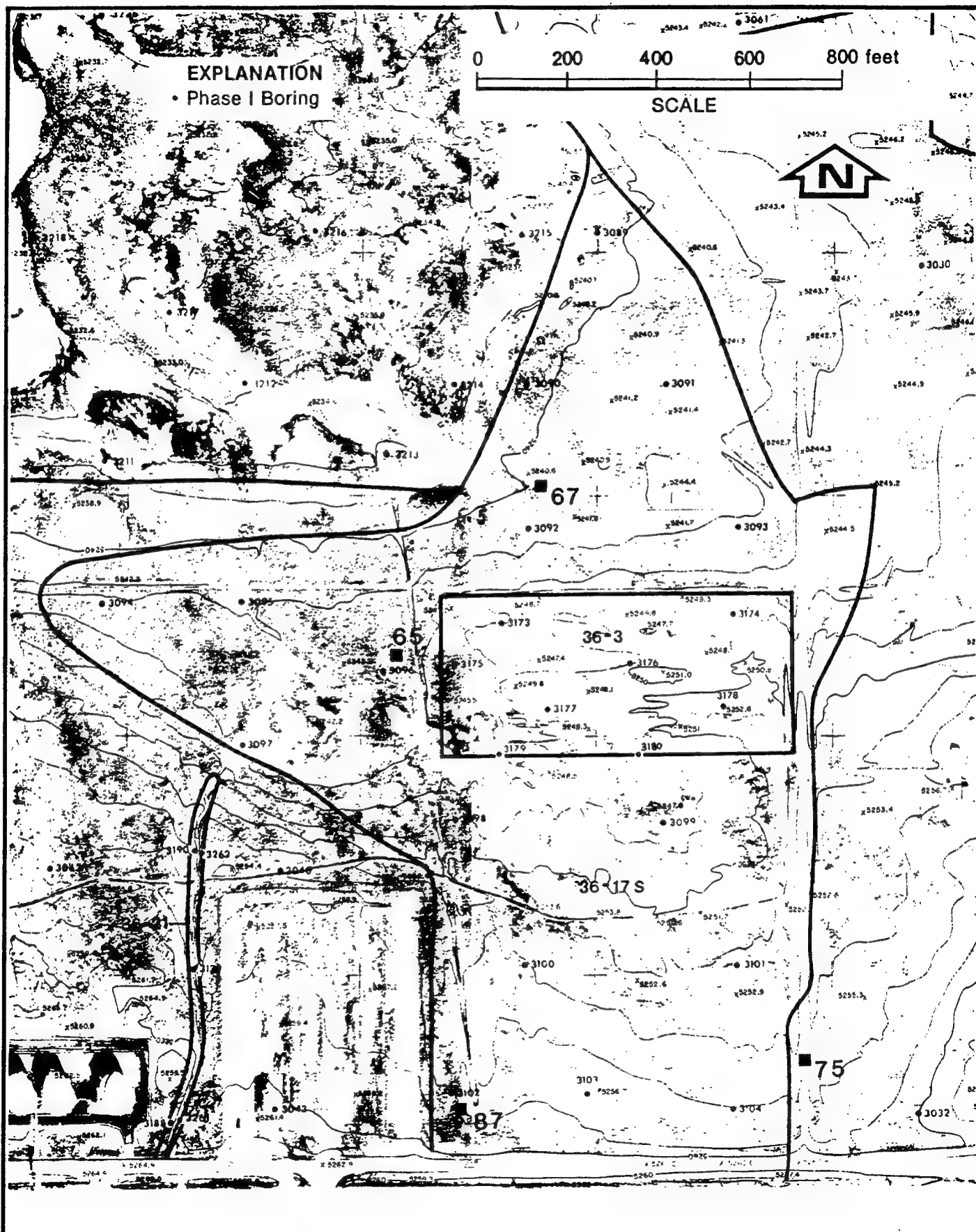


Figure 36-17-10b
 LOCATION OF SELECTED MONITORING
 WELLS IN THE VICINITY OF
 SOURCE 36-17S
 SOURCE: ESE, 1986

Prepared for:
 U.S. Army Program Manager's Office
 For Rocky Mountain Arsenal
 Aberdeen Proving Ground, Maryland

Table 36-17-5a. Selected Analytical Results for Ground Water Samples
Collected Near Source 36-17N (units in µg/g or ppb)

Aquifer Date	Well Designation					
	63 Alluvial 79046 ²	80 Alluvial 79047 ²	84 Alluvial 79047 ²	84 Alluvial 83145 ²	88 Alluvial 79047 ²	88 Alluvial 83143 ²
Arsenic	<0.5	<0.5	0.015*	—	0.016*	—
Aldrin	<1.0	<1.0	<1.0*	<0.2*	<1.0	<0.2
Dieldrin	1.54	<0.5	<0.5*	<0.2*	<0.5*	<0.2*
Endrin	0.5	<0.5	<0.5*	<0.2*	<0.5*	<0.2*
Isodrin	<0.5	<0.5	<0.5*	9.42	<0.5*	0.55
DBCP	<0.4	<0.4*	<0.4*	0.23*	<0.4*	<0.2*
DCPD	<10.0	<10.0	<10.0	<1.0	<10.0	<1.0
DIMP	2.13	7540*	11590*	13900*	129.0*	223*
PCPMS	<5.0	<5.0	<5.0	—	<5.0*	—
PCMSO	<5.0	<5.0	<5.0	<20.0	<5.0*	<20.0
PCMSO ₂	<5.0	30.9	129.0*	<20.0	<5.0	<20.0
Dithiane	<5.0	25.7*	450.0*	611.0*	<5.0*	1050.0*
Oxathiane	<0.5	5.65*	196.0*	—	92.9*	—
Carbon Tetrachloride	—	—	—	<1.0	—	<1.0
Chloroform	—	—	—	34.0	—	11.0
Trichloroethene	—	—	—	1089.0	—	1.0
Tetrachloroethene	—	—	—	9.0	—	<1.0
Benzene	—	—	—	16.0	—	11.0
Chlorobenzene	—	—	—	<1.0	—	<1.0
Dichlorobenzene	—	—	—	<1.0	—	<1.0
Toluene	—	—	—	<1.0	—	<1.0
Xylene	—	—	—	<0.1	—	<0.1

¹ One date available.

² Multiple dates available.

* Positive results on other date.

Table 36-17-5b. Selected Analytical Results for Ground Water Samples
Collected Near Source 36-17S (units in µg/g or ppb)

Aquifer Date	Well Designation				
	65 Alluvial 79081 ²	67 Alluvial 79080 ²	75 Alluvial 79080 ²	75 Alluvial 83119 ²	87 Alluvial 79081 ²
Arsenic	<0.5	<0.5	<0.5	—	<0.5
Aldrin	<1.0	<1.0*	<1.0	<0.2	<1.0
Dieldrin	<0.5	0.79*	0.85*	0.46*	<0.5*
Endrin	<0.5	<0.5*	<0.5	<0.2	<0.5
Isodrin	<0.5	<0.5*	<0.5*	<0.2*	<0.5*
DBCP	<0.4	<0.4	<0.4*	<0.2*	<0.4*
DCPD	<10.0	<10.0*	<10.0	<1.0	<10.0
DIMP	<2.0	<2.0*	<2.0*	<10.0*	3.4*
PCPMS	<5.0	<5.0	<5.0	—	<5.0
PCPMSO	<5.0	<5.0*	<5.0	<20.0	<5.0*
PCPMSO ₂	<5.0	<5.0*	<5.0	<20.0	13.1*
Dithiane	<5.0	<5.0*	<5.0	<20.0	<5.0
Oxathiane	<5.0	<5.0	<5.0	—	<5.0 ¹
Carbon Tetrachloride	—	—	—	<1.0 ¹	—
Chloroform	—	—	—	65.0 ²	—
Trichloroethene	—	—	—	<1.0 ²	—
Tetrachloroethene	—	—	—	<1.0 ²	—
Benzene	—	—	—	47.0 ¹	—
Chlorobenzene	—	—	—	<1.0 ¹	—
Dichlorobenzene	—	—	—	<1.0 ¹	—
Toluene	—	—	—	<1.0 ¹	—
Xylene	—	—	—	<0.1 ¹	—

¹ One date available.

² Multiple dates available.

* Positive results on other date.

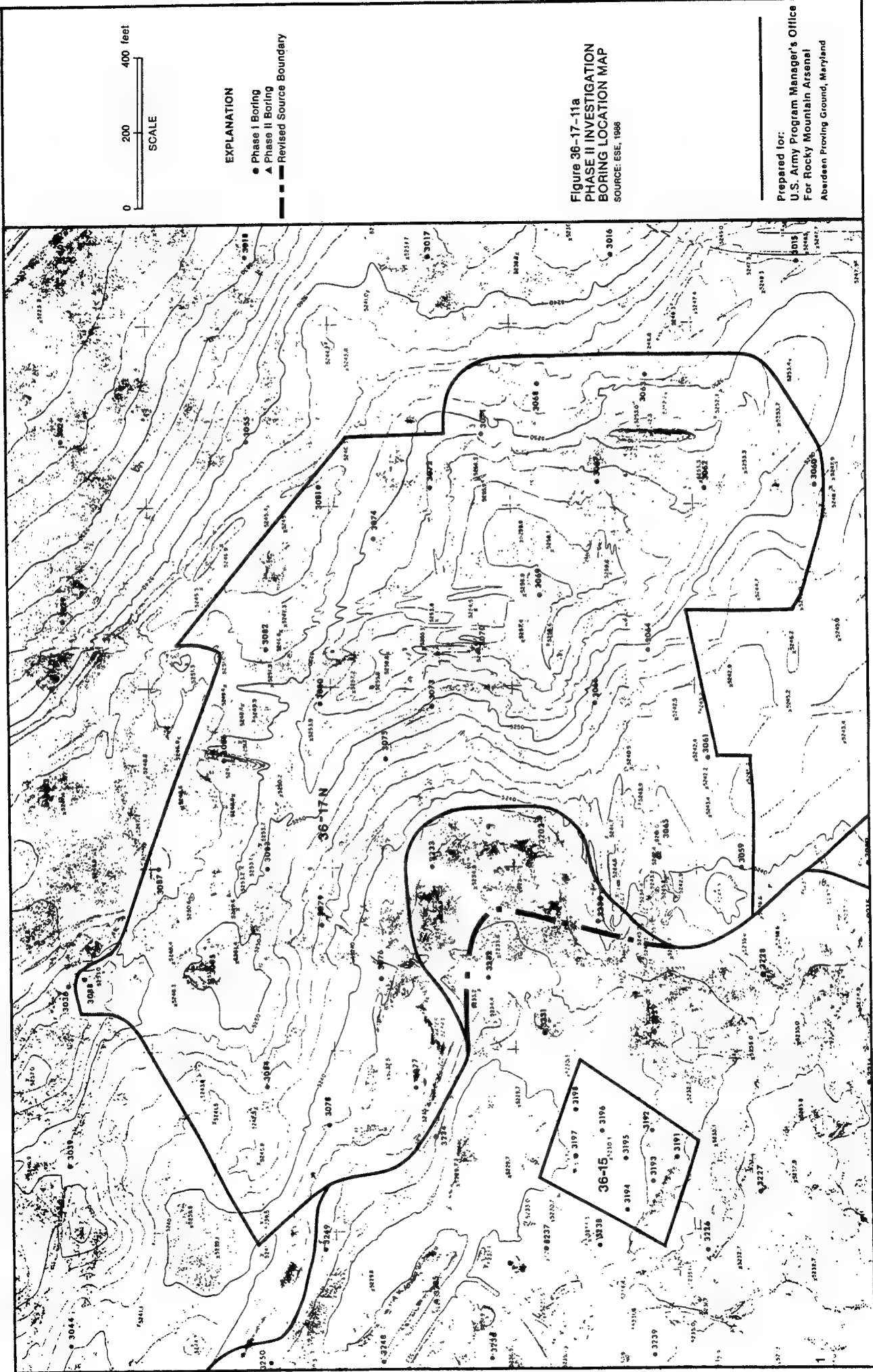
data indicate the presence of numerous contaminants in the alluvial aquifer including chlorinated pesticides, DBCP, DCPD, organosulfur compounds, aromatic solvents, halogenated aliphatic, and aromatic solvents. Although a precise determination of the source of these compounds is difficult, they are consistent with reported disposal of pesticides and herbicide process wastes and mustard in the area. Contributions of pesticide and herbicide wastes and solvents may also be derived from Source 36-3, the Shell insecticide pits.

3.1.3 Phase II Contamination Survey

3.1.3.1 Revised Phase II Program

Historical disposal activities within Source 36-17N have resulted in contamination being confined to the immediate vicinity of disposal trenches or burn pits. This resulted in Phase I chemical data which for the most part do not exceed contaminant indicator levels. The localized nature of contamination within this source area is confirmed by the soil quality data generated at Borehole 3086. Extremely elevated concentrations are present in soils contained within a former trench site, and little or no contamination is found in adjacent areas.

Based on an evaluation of Phase I analytical data, a minor modification was made to the Source 36-17N boundaries. This modification, shown in Figure 36-17-11a, is the inclusion of a small basin in the eastern portion of Basin A into the Source 36-17 area. This was based on the observation that contaminants detected in Boreholes 3233, 3202, and 3230 do not occur in adjacent portion of Basin A. Although this portion of Section 36 is a natural depression, it is at a slightly higher elevation than the main portion of Basin A. This area was also utilized for trenched disposal of materials as evidenced by interpretation of aerial photographs. Although much of the soil between Sources 36-1 and 36-17 contains contaminants which have resulted from several process boundaries of sources have been defined such that areas which deviate from recognized Basin A contaminant patterns are included within the associated portions of Source 36-17.



As contamination in Source 36-17N appears to be confined to very isolated areas, a Phase II boring program alone would provide only "hit or miss" information on the extent of contamination. It is anticipated that many of the numerous trenches observed in historical aerial photographs contain contaminated soil similar to that observed in Borehole 3086. Therefore the primary thrust of the initial Phase II program will be to use available resources to accurately locate these trenches.

Based on the success of the limited geophysical investigation of Source 36-17N, more intensive Phase II geophysical program will be implemented map areas that most likely contain disposal trenches. The Phase II geophysical program will employ both EM and magnetometer methods. The entire area of Source 36-17N will be covered by transects spaced at 10 foot intervals. EM and magnetometer data will be collected on transects and spaced at 20 ft, but offset 10 ft from each other (e.g., EM data will be obtained at lines 0, 20, and 40 ft and magnetometer data at 10, 30, 50 ft). This provides continuous data collected along transects spaced at 10 foot intervals.

A detailed Phase II soil boring program for Source 36-17N will be formulated at the conclusion of this geophysical program. Areas that exhibit anomalies suggestive of disposal trenches will be thoroughly investigated by Phase II boring. For budget estimation and manpower requirement purposes, a proposed Phase II boring program is presented below:

<u>Number of Borings</u>	<u>Depth (ft)</u>	<u>Number of Samples</u>
10	20	50
20	10	60
<u>10</u>	5	<u>20</u>
40		130

Sampling intervals are assumed to be the same for Phase I, that is 0 to 1, 4 to 5, 9 to 10, 14 to 15, and 19 to 20 ft.

04/30/86

The analytical program for Source 36-17N is summarized below. This is only an estimate and is based on the assumption that borings in the northern half of the site (half of the sample total) will be analyzed for the Phase I contaminants and in the southern half will be analyzed for specified compounds. This assumption is derived from a better understanding of the contaminants in the southern area. Volatile organics will be performed on approximately 10 percent of the sample population.

<u>Analytical Method</u>	<u>Number of Samples</u>
Semi-Volatiles	65
Volatile Organics	13
Metals	130
Organochlorine Compounds	65
Organosulfur Compounds	65
Arsenic	130
Mercury	130

Following the evaluation of analytical data generated by the Phase I investigative program the boundaries Source 36-17S were also revised. These revisions, shown in Figure 36-17-11b were significant for the southern, western, and northern borders of this area. As no contaminants were detected in significant concentrations in the southern portion of Source 36-17S (Boreholes 3102, 3103, and 3104) this area has been deleted from the Phase II investigation. The revised southern boundary is located through a line connecting Phase I Boreholes 3100 and 3101 as well as "uncontaminated" Borehole 3040 none of which detected contaminant compounds.

The western edge of this source area has been modified to include the area south of Borehole 3097 where DIMP and pesticides were detected and to meet with the revised boundaries of Basin A (Source 36-1) in this area. The exact location of the source boundary in this region is uncertain due to the loss of samples from Borehole 3094 as a result of the presence of mustard. The northwest edge of Source 36-17S has been modified to include an area formerly included in Source 36-1. The reason

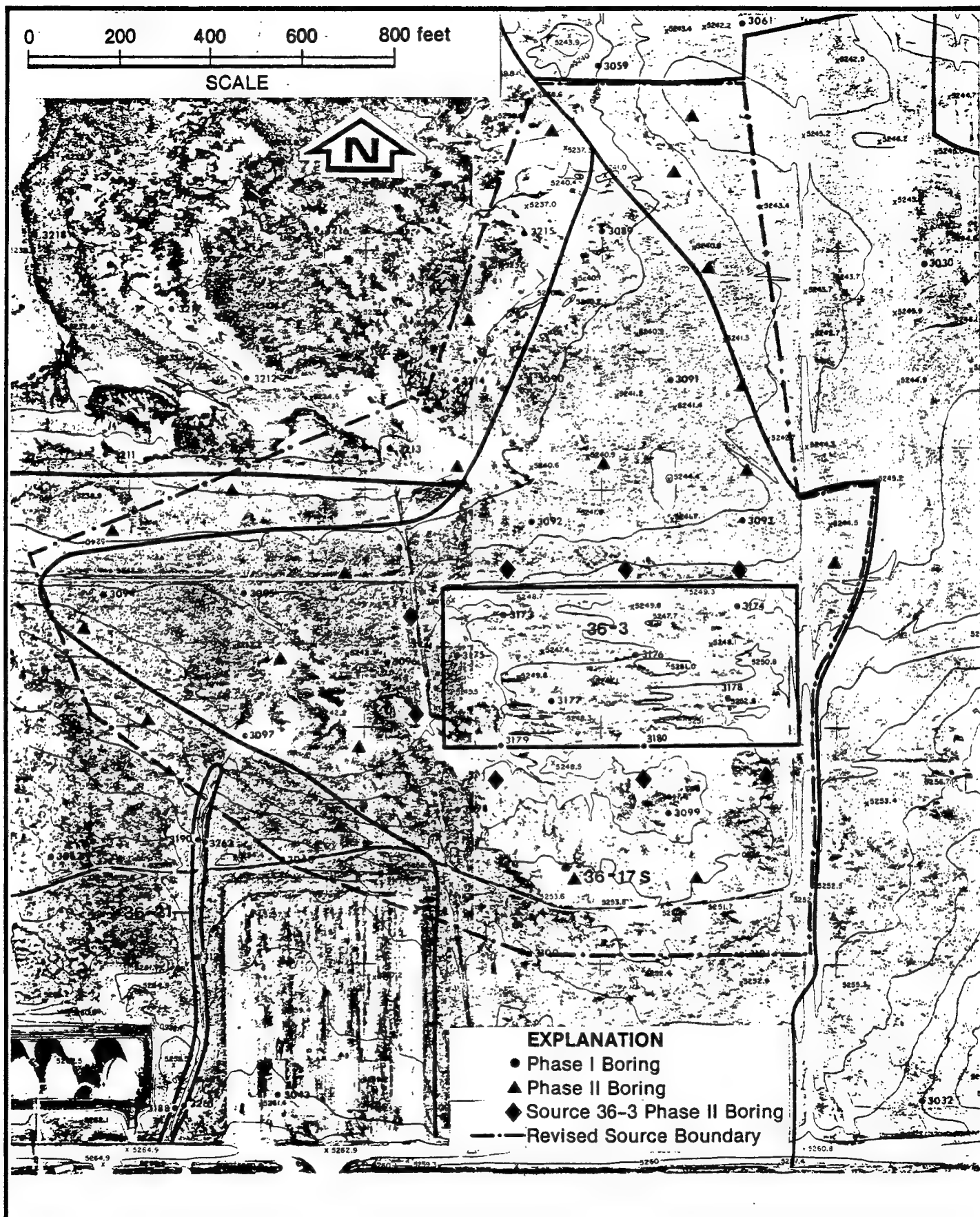


Figure 36-17-11b
 PHASE II INVESTIGATION
 BORING LOCATION MAP
 SOURCE: ESE, 1986

Prepared for:
 U.S. Army Program Manager's Office
 For Rocky Mountain Arsenal
 Aberdeen Proving Ground, Maryland

for this reallocation of this area is the presence of DIMP, organosulfur compounds, and DBCP in Boreholes 3213, 3214, and 3215, which is uncharacteristic of contaminant trends in adjacent portions of Basin A. Again the exact location of this portion of the Source 36-17 boundary is questionable due to the loss of samples from Boreholes 3090 and 3092 as a result of mustard contamination.

The final alteration in the boundary of this source area is in the northeast section. Contaminants detected in Boreholes 3089 and 3059 (Source 36-17N) have caused revisions of the source boundary to connect these two areas. An area of significant vegetation stress in this location is now included within the Source 36-17 boundary. The two portions of Source 36-17 will remain separate even though they are contiguous. The area of this source may be redistributed or subdivided based on Phase II results.

To aid in disposal trench location a geophysical program will be performed directly north of Source 36-3. The techniques utilized and the program design will be the same as for those in Source 36-17N. The results of the Phase II geophysical program will be combined with the results of aerial photograph interpretation and field mapping of surface expressions to design the Phase II soil boring program. As samples from four boreholes in the source area were not analyzed due to the presence of mustard, geophysics and field mapping may be the only method of estimating volumes of contaminated soil unless chemical analyses can be performed at some location on mustard contaminated soils.

The Phase II soil boring program for Source 36-17S will be finalized after geophysical studies are complete. A Phase II program has been proposed for estimation purposes. The exact locations of boreholes and sampling intervals may be altered prior to development of the final Phase II plan.

Source 36-17S Phase II soil sampling plan is shown in Figure 36-17-11b. Eight boreholes proposed adjacent to Source 36-3 are part of the Phase II program for Source 36-3 to define the areal extent of contamination for this source. Modifications of the Source 36-3 boundary will not be made until completion of the Phase II investigation due primarily to lack of data directly north of this source (mustard contaminated soils not analyzed). The Phase II program consists of the construction of 200 soil borings. Sampling intervals will be 0 to 1, 4 to 5, and 9 to 10 ft. Of the 20 remaining boreholes anticipated for this source 9 will be to depths of 5 ft, and 11 to depths of 10 ft.

<u>Number of Borings</u>	<u>Depth (ft)</u>	<u>Number of Samples</u>
11	10	33
<u>9</u>	5	<u>18</u>
TOTAL 30		51

The analytical schedule for this source area is listed below. The lack of chemical data in certain portions of this source area necessitates a repeat of the Phase I analytical schedule. Samples to the north of Source 36-3 will be analyzed for a full range of analytes. Samples from the six borings south and west of Source 36-3 will be tested for organochlorine pesticides, DBCP, DIMP, and organosulfur compounds (see Figure 36-17-12).

<u>Analytical Method</u>	<u>Number of Samples</u>
Organochlorine pesticides	35
Organosulfur Compounds	17
DBCP	51
Metals	35
Organophosphorus Compounds	33
DIMP/DMMP	33
Arsenic	51
Mercury	51
Volatile Organics	12
Extractable Organics	18

Based on Phase I chemical analysis results, it is anticipated that all Phase II investigations in Source 36-17 will require use of full Level C Protection.

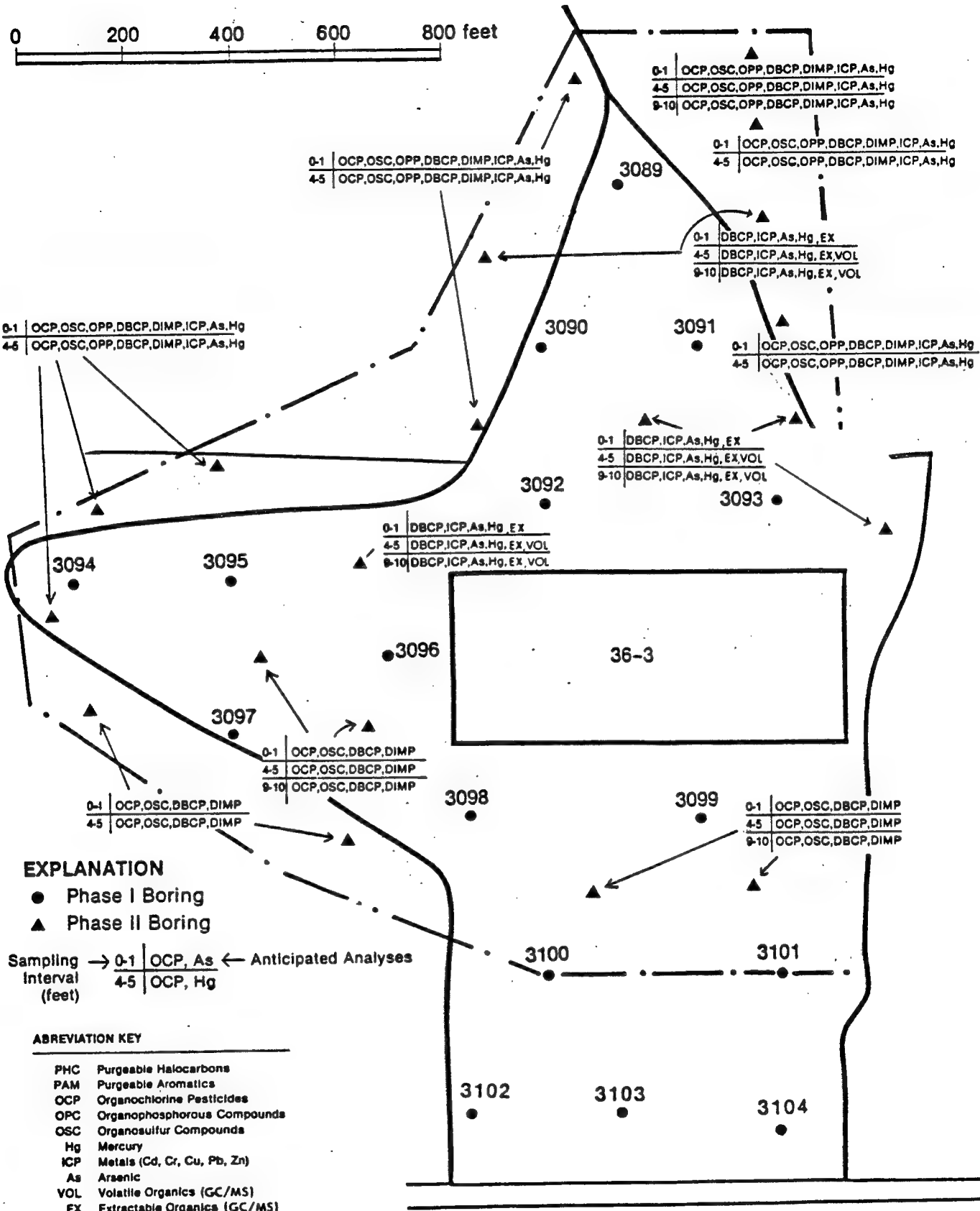
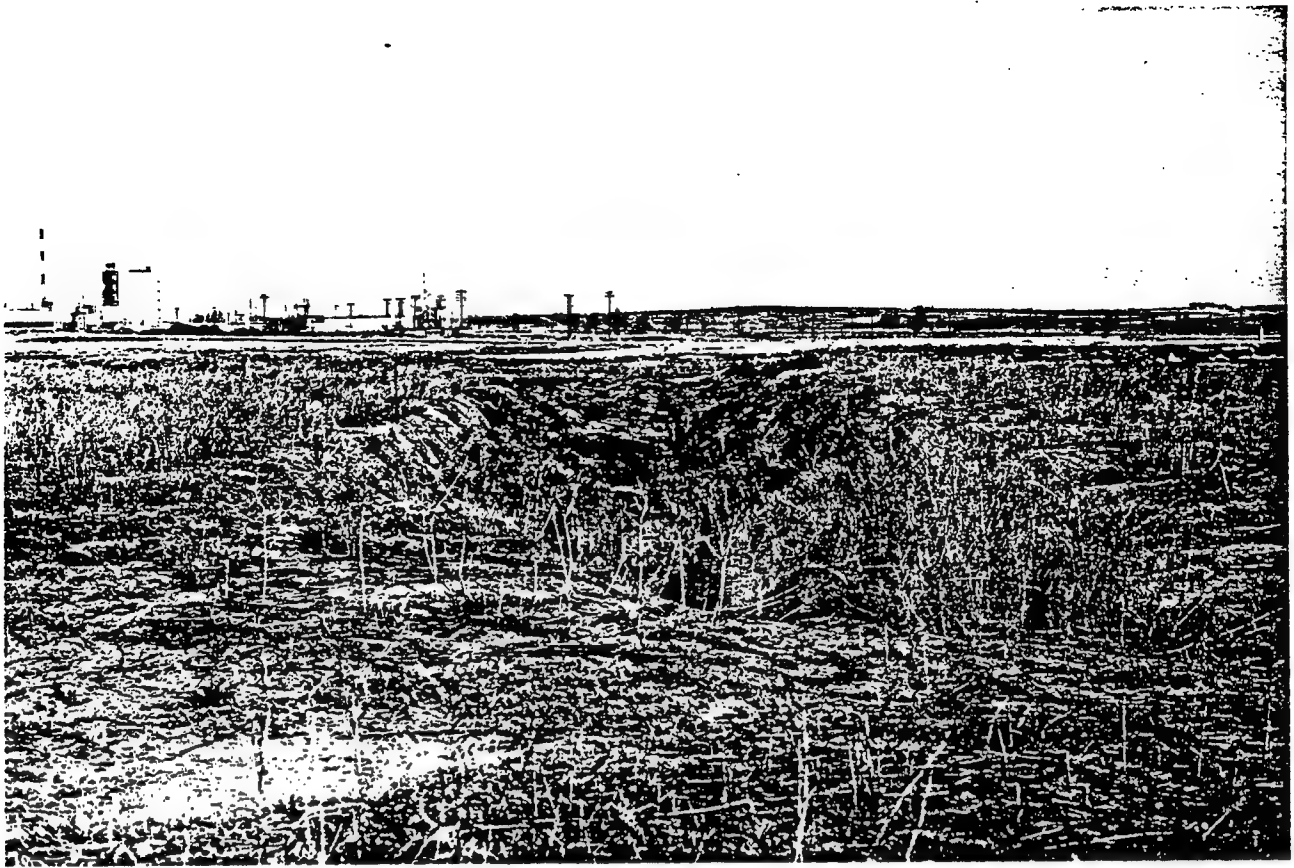


Figure 36-17-12
SOURCE 36-17
PHASE II CHEMICAL ANALYSIS SCHEDULE
SOURCE: ESE, 1986

Prepared for:
U.S. Army Program Manager's Office
For Rocky Mountain Arsenal
Aberdeen Proving Ground, Maryland

APPENDIX 37-17-A



SOURCE 36-17N
View North



SOURCE 36-17N
View West



SOURCE 36-17S
View Northwest



SOURCE 36-17S
View Southwest

APPENDIX 36-17-B

ENVIRONMENTAL SCIENCE & ENGINEERING

01/11/86

STATUS: PRELIMINARY

PROJECT NUMBER 04936300

PROJECT NAME SECTION 36 RMA

PROJECT MANAGER: BILL FRASER

FIELD GROUP LEADER: GEISZLER/BERGDOLL

FIELD GROUP: 3617N SAMPLES: ALL

PARAMETERS	STORET #	3059A 505600	3059B 505601	3060A 505606	3060B 505607	3061A 505612	3061B 505613	3062A 505616	3062B 505619	3063A 505624	3063B 505625
DATE	METHOD #	6/25/85	6/25/85	06/27/85	06/27/85	6/25/85	6/25/85	06/27/85	06/27/85	06/27/85	06/27/85
TIME		1247	1300	1301	1313	1330	1340	956	1009	1346	1358
SAMPLE TYPE	71999 0	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO
SAMPLE DEPTH(CM)	99758 0	0	122	0	122	0	122	0	122	0	122
SITE TYPE 1	99759 0	BORE	BORE	BORE	BORE	BORE	BORE	BORE	BORE	BORE	BORE
INSTALLATION CODE	99720 0	RK	RK	RK	RK	RK	RK	RK	RK	RK	RK
SAMPLING TECHNIQUE	72005 0	S	S	S	S	S	S	S	S	S	S
MOISTURE(ZMET MT)	70320 0	9.2	6.1	7.7	3.3	2.5	1.9	7.5	4.5	5.0	5.3
CADMIUM,SED (UG/G- DRY)	1028 0	<0.9	<0.9	<0.5	<0.5	<0.9	<0.9	<0.5	<0.5	<0.5	<0.5
CR,SUIL (UG/G-DRY)	99584 0	16	10	14	<7	18	<7	11	12	11	9
COPPER,SED (UG/G- DRY)	1043 0	8	<5	15	8	11	5	14	11	20	9
LEAD,SED (UG/G-DRY)	1052 0	27	<17	<16	<16	29	<17	<16	<16	<16	<16
ZINC,SED (UG/G-DRY)	1093 0	57	32	39	37	70	26	<28	37	64	<28
ARSENIC,SED (UG/G- DRY)	1003 0	7.9	<4.7	<5.2	<5.2	6.7	<4.7	<5.2	<5.2	<5.2	<5.2
MERCURY,SED (UG/G- DRY)	71921 0	0.15	<0.05	<0.07	<0.07	<0.05	<0.05	<0.07	<0.07	<0.07	<0.07
ALDRIN,SED (UG/G- DRY)	98356 0	<0.900	<0.900	<0.500	<0.500	<0.900	<0.900	<0.500	<0.500	<0.500	<0.500
DIELDRIN(UG/G-DRY)	98365 0	<0.300	<0.300	<0.600	<0.600	<0.300	<0.300	<0.600	<0.600	<0.600	<0.600
DDE,PP* (UG/G-DRY)	98364 0	<0.400	<0.400	<2.00	<2.00	<0.400	<0.400	<2.00	<2.00	<2.00	<2.00
ENDRIN (UG/G-DRY)	98369 0	<0.700	<0.700	<4.00	<4.00	<0.700	<0.700	<4.00	<4.00	<4.00	<4.00
CHLORDANE,SED(UG/G- DRY)	98361 0	70.1	<1.00	<6.00	<6.00	<1.00	<1.00	<6.00	<6.00	<6.00	<6.00
DDE,PP* (UG/G-DRY)	98363 0	<0.300	<0.300	<0.500	<0.500	<0.300	<0.300	<0.500	<0.500	<0.500	<0.500
1,4 OXATHIANE (UG/G- DRY)	98644 0	<0.300	<0.300	<0.500	<0.500	<0.300	<0.300	<0.500	<0.500	<0.500	<0.500

ENVIRONMENTAL SCIENCE & ENGINEERING				STATUS: PRELIMINARY				PROJECT NAME SECTION 36 RMA				PROJECT MANAGER: BILL FRASER				FIELD GROUP LEADER: GEISZLER/BERGDUHL			
PROJECT NUMBER 04936300				01/11/86				SAMPLES: ALL				SAMPLE NUMBERS							
FIELD GROUP: 3617M																			
PARAMETERS				STORET #				3059A 3059B 3060A 3060B				3061A 3061B 3062A 3062B				3063A 3063B			
				505600 505601 505606 505607								505612 505613 505618 505619				505624 505625			
DATE				METHOD #															
6/25/85				6/25/85				6/25/85				6/25/85				6/25/85			
TIME																			
DIMP (UG/G-DRY)				98645				1247				1300				1313			
DICHORVOS (UG/G-DRY)				98646				<0.500				<0.500				<0.500			
HEXCLCYPENDI (UG/G-DRY)				98647				<0.300				<0.300				<0.300			
MALATHION (UG/G-DRY)				98648				<1.00				<1.00				<1.00			
ISODRIN (UG/G-DRY)				98649				<0.600				<0.600				<0.600			
1,4 DITHIANE (UG/G-DRY)				98650				<0.300				<0.300				<0.300			
DICYCLOPENTADIENE (UG/G-DRY)				98651				<0.300				<0.300				<0.300			
DBCP (NEMAGON) (UG/G-DRY)				98652				<0.005				<0.005				<0.005			
P-CLPHENYLMETHYLSULFI				98653				<0.300				<0.300				<0.300			
P-CLPHENYLMETHYLSULFO				98654				<0.400				<0.400				<0.400			
ATRAZINE (UG/G-DRY)				98655				<0.700				<0.500				<0.500			
SUPONA (UG/G-DRY)				98656				<0.500				<0.500				<0.500			
DNMP (UG/G-DRY)				98657				<2.00				<2.00				<2.00			
EPT*PARATHION (UG/G-DRY)				98658				<0.700				<0.700				<0.700			
CARBON TETRACHLORIDE				98660				NA				NA				NA			
CHLOROBENZENE				98661				NA				NA				NA			
CHLOROFORM				98662				NA				NA				NA			
1,1-DICHLOROETHANE				98663				NA				NA				NA			
1,2-DICHLOROETHANE				98664				NA				NA				NA			
BICYCLOHEPTADIENE				98666				NA				NA				NA			

ENVIRONMENTAL SCIENCE & ENGINEERING

01/11/86

STATUS: PRELIMINARY

PROJECT NUMBER 84936300

PROJECT NAME SECTION 36 RMA

FIELD GROUP: 3617H

PROJECT MANAGER: BILL FRASER

PARAMETERS: ALL

FIELD GROUP LEADER: GEISLER/BERGDELL

SAMPLES: ALL

PARAMETERS	STORE #	3059A 505600	3059B 505601	3060A 505606	3060B 505607	SAMPLE NUMBERS				3062A 505616	3062B 505619	3063A 505624	3063B 505625
DATE	METHOD #	6/25/85	6/25/85	6/27/85	6/27/85	6/25/85	6/25/85	6/25/85	6/25/85	6/27/85	6/27/85	6/27/85	6/27/85
TIME		1247	1300	1301	1313	1330	1340	1340	1340	956	1009	1346	1353
TRANS-1,2-DICHLOROE THENE (UG/G-DRY)	98687	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ETHYLBENZENE (UG/G-DRY)	98688	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
METHYLENE CHLORIDE (UG/G-DRY)	98689	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE (UG/G-DRY)	98690	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOLUENE (UG/G-DRY)	98691	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHAN E (UG/G-DRY)	98692	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-TRICHLOROETHAN E (UG/G-DRY)	98693	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROETHENE (UG/G-DRY)	98694	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
M-XYLENE (UG/G-DRY)	98695	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MIBK (UG/G-DRY)	98696	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DMS (UG/G-DRY)	98697	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZENE (UG/G-DRY)	98699	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
O-AND/OR P-XYLENE (UG/G-DRY)	98700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCPMSD2 (UG/G-DRY)	98703	<0.300	<0.300	<0.400	<0.400	<0.300	<0.300	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400
COORDINATE, E/N (SIP)	98393	2186494	2186494	2187550	2187550	2186802	2186802	2186802	2187549	2187549	2187549	2187549	2187549
COORDINATE, N/S (SIP)	98392	182670	182670	182664	182664	182966	182966	182966	182962	182962	182962	183123	183123
UNK542 (UG/G)	90024			NA	NA				1.19	1.65	NA	NA	NA
UNK579 (UG/G)	90043								0.932	2.69			
UNK609 (UG/G)	90066	* 0.869		NA	NA				0.973	3.14	NA	NA	NA
UNK633 (UG/G)	90085								0.540	2.09	0.631		

ENVIRONMENTAL SCIENCE & ENGINEERING

01/11/86

STATUS: PRELIMINARY

PROJECT NUMBER 84936300

FIELD GROUP: 3617W

PROJECT NAME SECTION 36 RMA

PROJECT MANAGER: BILL FRASER

FIELD GROUP LEADER: GEISLER/BERGOLL

FIELD ORIGIN: JUDITH
PARAMETERS: ALL
SAMPLES: ALL

	SAMPLE NUMBERS	
INDEX M	3061A	3061B
PARAMETERS	30598	30608
	30599	30609
	30600	30610
	30601	30611
	30602	30612
	30603	30613
	30604	30614
	30605	30615
	30606	30616
	30607	30617
	30608	30618
	30609	30619
	30610	30620
	30611	30621
	30612	30622
	30613	30623
	30614	30624
	30615	30625
	30616	30626
	30617	30627
	30618	30628
	30619	30629
	30620	30630
	30621	30631
	30622	30632
	30623	30633
	30624	30634
	30625	30635
	30626	30636
	30627	30637
	30628	30638
	30629	30639
	30630	30640
	30631	30641
	30632	30642
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	30639	30649
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	30650	30660
	30651	30661
	30652	30662
	30653	30663
	30654	30664
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	30657	30667
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	30664	30674
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	30669	30679
	30670	30680
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	30672	30682
	30673	30683
	30674	30684
	30675	30685
	30676	30686
	30677	30687
	30678	30688
	30679	30689
	30680	30690
	30681	30691
	30682	30692
	30683	30693
	30684	30694
	30685	30695
	30686	30696
	30687	30697
	30688	30698
	30689	30699
	30690	30700
	30691	30701
	30692	30702
	30693	30703
	30694	30704
	30695	30705
	30696	30706
	30697	30707
	30698	30708
	30699	30709
	30700	30710
	30701	30711
	30702	30712
	30703	30713
	30704	30714
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	30710	30720
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	30714	30724
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	30718	30728
	30719	30729
	30720	30730
	30721	30731
	30722	30732
	30723	30733
	30724	30734
	30725	30735
	30726	30736
	30727	30737
	30728	30738
	30729	30739
	30730	30740
	30731	30741

SAMPLE NUMBERS

	METHOD #	DATE	TIME
	6/25/85	06/27/85	06/27/85
	1247	1300	1309
		1301	1340
		1313	1330
			1346
			1358

UNK619 (UG/G) 90105 * 0.605

UNK637 (UG/G) 90089 ± 0.707

UNK654 (UG/G) 90113 0
▲ 0.375

UNK631 (UG/G) 90083 4 0.375

UNK636 (UG/G) 90088 * 0.713

UNK641 (UG/G) 90107 * 0.311

WAK530 (UG/G) 90019

UNK554 (UG/G) 90096

UNK55 (UG/G) 90097

ENVIRONMENTAL SCIENCE & ENGINEERING

01/11/86

STATUS: PRELIMINARY

PROJECT NUMBER 84936300
FIELD GROUPS: 3613M
PARAMETERS: ALL

PROJECT NAME SECTION 36 RMA
PROJECT MANAGER: BILL FRASER
FIELD GROUP LEADER: GEISZLER/BLKGDWILL

PARAMETERS	STORET #	3064A 505630	3064B 505631	3065A 505636	3065B 505637	3065C 505638	3066A 505642	3066B 505643	3067A 505648	3067B 505649	3067C 505650
DATE	METHOD #	06/26/85	06/26/85	06/26/85	06/26/85	06/26/85	06/26/85	06/26/85	06/27/85	06/27/85	06/27/85
TIME		1014	1031	1340	1358	1414	1059	1115	115	732	753
TRANS-1,2-DICHLOROT ENE (UG/G-D	98687	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.330
ETHYLBENZENE	98688	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.400
METHYLENE CHLORIDE	98689	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	98690	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.530
TOLUENE	98691	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.350
1,1,1-TRICHLOROETHAN E (UG/G-D	98692	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.530
1,1,2-TRICHLOROETHAN E (UG/G-D	98693	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.630
TRICHLOROETHENE	98694	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.600
M-XYLENE	98695	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.330
MIBK	98696	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.430
DMS	98697	NA	NA	NA	NA	NA	NA	NA	NA	NA	<4.30
BENZENE	98699	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1.10
O-AND/OR P-XYLENE	98700	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.530
PCPMS02 UG/G-DRY	98703	<0.400	<0.400	<4.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400
COORDINATE E/W/S (IP)	98393	2107101	2107101	2106590	2106590	2106590	2106952	2106952	2107554	2107554	2107554
COORDINATE N/S (IP)	98392	103127	103127	103110	103110	103110	103273	103273	103264	103264	103264
UNK542 (UG/G)	90024	0.324	0.932	IL	1.53	1.64	0.866	1.38	2.13	1.04	1.04
UNK579 (UG/G)	90043	0.324	0.414	IL	0.547	0.469	0.541	0.956	0.533	0.518	0.518
UNK609 (UG/G)	90066	0.324	0.518	IL	IL	0.352	IL	0.319	0.427	0.311	0.311
UNK633 (UG/G)	90085	IL	0.311	11.2	IL	0.352	0.325	0.956	0.747	0.621	0.777

ENVIRONMENTAL SCIENCE & ENGINEERING		01/11/86		STATUS: PRELIMINARY	
PROJECT NUMBER 84936300		PROJECT NAME SECTION 36 RMA		PROJECT MANAGER: BILL FRASER	
FIELD GROUP: 3617H		PROJECT MANAGER: BILL FRASER		FIELD GROUP LEADER: GEISLER/PIRGROLL	
PARAMETERS: ALL		SAMPLES: ALL			

PARAMETERS	STORET #	3064A	3064B	3065A	3065B	3065C	3066A	3066B	3067A	3067B	3067C
		505630	505631	505636	505637	505638	505642	505643	505648	505649	505650
DATE	METHOD #	06/26/85	06/26/85	06/26/85	06/26/85	06/26/85	06/26/85	06/26/85	06/27/85	06/27/85	06/27/85
TIME		1014	1031	1340	1358	1414	1059	1115	115	132	133

UNK619 (UG/G)	90105	0
UNK637 (UG/G)	90089	0
UNK654 (UG/G)	90113	0
UNK631 (UG/G)	90083	0
UNK636 (UG/G)	90088	0
UNK641 (UG/G)	90107	0
UNK530 (UG/G)	90019	0
UNK554 (UG/G)	90096	0
UNK555 (UG/G)	90097	0

ENVIRONMENTAL SCIENCE & ENGINEERING

01/11/86

STATUS: PRELIMINARY

PROJECT NUMBER 84936300
FIELD GROUP: 36174
PARAMETERS: ALL

PROJECT NAME SECTION 36 RMA
PROJECT MANAGER: BILL FRASER
FIELD GROUP LEADER: GEISZLER/BEFEDULL

SAMPLES: ALL

PARAMETERS	STORE #	30670 505651	3067E 505652	3068A 505654	3068B 505655	3069A 505660	3069B 505661	3069C 505662	3069D 505663	3070A 505666	3073A 505667
DATE	METHOD #	06/27/85	06/27/85	06/27/85	06/27/85	7/1/85	7/1/85	7/1/85	7/1/85	7/1/85	7/1/85
TIME		822	852	1446	1502	748	804	828	933	1104	1120
SAMPLE TYPE	71999	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO
SAMPLE DEPTH(CN)	99758	427	579	0	122	0	122	274	427	0	122
SITE TYPE 1	99759	BORE	BORE	BORE	BORE	BORE	BORE	BORE	BORE	BORE	BORE
INSTALLATION CODE	99720	RK	RK	RK	RK	RK	RK	RK	RK	RK	RK
SAMPLING TECHNIQUE	72005	S	S	S	S	S	S	S	S	S	S
MOISTURE(TWET WT)	70320	17.8	20.0	5.3	4.7	7.2	3.4	7.1	16.1	9.2	6.7
CADMIUM,SED (UG/G-DRY)	1028	0.9	1.0	<0.5	<0.5	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9
CR,SOIL (UG/G-DRY)	99584	14	15	14	10	9	<7	9	34	<7	11
COPPER,SED (UG/G-DRY)	1043	41	46	16	10	8	5	8	25	15	7
LEAD,SED (UG/G-DRY)	1052	25	22	21	<16	<17	<17	<17	21	<17	<17
ZINC,SED (UG/G-DRY)	1093	90	86	44	32	32	24	35	69	42	43
ARSENIC,SED (UG/G-DRY)	1003	<5.2	<5.2	<5.2	<5.2	<4.7	<4.7	6.1	<4.7	4.7	5.5
MERCURY,SED (UG/G-DRY)	71921	<0.07	<0.07	<0.07	<0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
ALDRIN,SED (UG/G-DRY)	98356	<0.500	<0.500	<0.500	<0.500	<0.900	<0.900	<0.900	<0.900	<0.900	<0.900
DIELDRIN(UG/G-DRY)	98365	<0.600	<0.600	<0.600	<0.600	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300
DDT,PP* (UG/G-DRY)	98364	<2.00	<2.00	<2.00	<2.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400
ENDRIN (UG/G-DRY)	98369	<4.00	<4.00	<4.00	<4.00	<0.700	<0.700	<0.700	<0.700	<0.700	<0.700
CHLORDANE,SED(UG/G-DRY)	98361	<6.00	<6.00	<6.00	<6.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
DDO,PP* (UG/G-DRY)	98363	<0.500	<0.500	<0.500	<0.500	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300
1,4 OXATHIANE (UG/G-DRY)	98644	<0.500	<0.500	<0.500	<0.500	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300

ENVIRONMENTAL SCIENCE & ENGINEERING

01/11/86

STATUS: PRELIMINARY

PROJECT NUMBER 84936300
FIELD GROUP: 3617M
PARAMETERS: ALL

PROJECT NAME SECTION 36 RHA
PROJECT MANAGER: BILL FRASER
FIELD GROUP LEADER: GILSILLER/011000LL

PARAMETERS	STORET #	3067D	3067E	3068A	3068B	3069A	3069B	3069C	3069D	3070A	3070B
	505651	505651	505652	505654	505655	505660	505661	505662	505663	505665	505667
DATE	06/22/85	06/22/85	06/22/85	06/22/85	06/22/85	7/1/85	7/1/85	7/1/85	7/1/85	7/1/85	7/1/85
TIME	822	852	1446	1502	748	804	933	1104	1123		
TRANS-1,2-DICHLOROBEN- ENE(UG/G-DRY)	98687	NA	<0.800	NA	NA	NA	NA	NA	NA	NA	NA
ETHYLBENZENE (UG/G-DRY)	98688	NA	<0.400	NA	NA	NA	NA	NA	NA	NA	NA
METHYLENE CHLORIDE (UG/G-DRY)	98689	NA		NA	NA	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE (UG/G-DRY)	98690	NA	<0.500	NA	NA	NA	NA	NA	NA	NA	NA
TOLUENE (UG/G-DRY)	98691	NA	<0.300	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE (UG/G-DRY)	98692	NA	<0.500	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE (UG/G-DRY)	98693	NA	<0.600	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROETHENE (UG/G-DRY)	98694	NA	<0.600	NA	NA	NA	NA	NA	NA	NA	NA
M-XYLENE (UG/G-DRY)	98695	NA	<0.300	NA	NA	NA	NA	NA	NA	NA	NA
MIBK (UG/G-DRY)	98696	NA	<0.400	NA	NA	NA	NA	NA	NA	NA	NA
DMOS (UG/G-DRY)	98697	NA	<4.00	NA	NA	NA	NA	NA	NA	NA	NA
BENZENE (UG/G-DRY)	98699	NA	<1.00	NA	NA	NA	NA	NA	NA	NA	NA
O-AND/OR P-XYLENE (UG/G-DRY)	98700	NA	<0.500	NA	NA	NA	NA	NA	NA	NA	NA
PCPMSU2 UG/G-DRY	93703	<0.400	<0.400	<0.400	<0.400	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300
COORDINATE, E/W(SIP)	98393	2187554	2187554	2187848	2187848	2187252	2187252	2187252	2187252	2187096	2187395
COORDINATE, N/S(SIP)	98392	183264	183264	183415	183415	183419	183419	183419	183419	183591	183591
UNK542 (UG/G)	90024	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
UNK579 (UG/G)	90043	NA	0.211	NA	NA	NA	NA	NA	NA	NA	NA
UNK609 (UG/G)	90066	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
UNK633 (UG/G)	90085	NA	0.500	NA	NA	NA	NA	NA	NA	NA	NA

ENVIRONMENTAL SCIENCE & ENGINEERING

01/11/86

STATUS: PRELIMINARY

PROJECT NUMBER 84936300

PROJECT NAME SECTION 36 RNA

FIELD GROUP: 3617W

PROJECT MANAGER: BILL FRASER

FIELD GROUP: JOIIN
PARAMETERS: ALL
SAMPLES: ALL

FIELD GROUP LEADER: GEISLER/BERGZEL

SAMPLES: ALL

PARAMETERS	SAMPLE NUMBERS
STUNET #	
30670	30688
30671	3069A
30672	3069B
30673	3069C
30674	3069D
30675	3069E
30676	3069F
30677	3069G
30678	3069H
30679	3069I
30680	3069J
30681	3069K
30682	3069L
30683	3069M
30684	3069N
30685	3069O
30686	3069P
30687	3069Q
30688	3069R
30689	3069S
30690	3069T
30691	3069U
30692	3069V
30693	3069W
30694	3069X
30695	3069Y
30696	3069Z
30697	3069AA
30698	3069AB
30699	3069AC
30700	3069AD
30701	3069AE
30702	3069AF
30703	3069AG
30704	3069AH
30705	3069AI
30706	3069AJ
30707	3069AK
30708	3069AL
30709	3069AM
30710	3069AN
30711	3069AO
30712	3069AP
30713	3069AQ
30714	3069AR
30715	3069AS
30716	3069AT
30717	3069AU
30718	3069AV
30719	3069AW
30720	3069AX
30721	3069AY
30722	3069AZ
30723	3069BA
30724	3069BB
30725	3069BC
30726	3069BD
30727	3069BE
30728	3069BF
30729	3069BG
30730	3069BH
30731	3069BI
30732	3069BJ
30733	3069BK
30734	3069BL
30735	3069BM
30736	3069BN
30737	3069BO
30738	3069BP
30739	3069BQ
30740	3069BR
30741	3069BS
30742	3069BT
30743	3069BU
30744	3069BV
30745	3069BW
30746	3069BX
30747	3069BY
30748	3069BZ
30749	3069CA
30750	3069CB
30751	3069CC
30752	3069CD
30753	3069CE
30754	3069CF
30755	3069CG
30756	3069CH
30757	3069CI
30758	3069CJ
30759	3069CK
30760	3069CL
30761	3069CM
30762	3069CN
30763	3069CO
30764	3069CP
30765	3069CQ
30766	3069CR
30767	3069CS
30768	3069CT
30769	3069CU
30770	3069CV
30771	3069CW
30772	3069CX
30773	3069CY
30774	3069CZ
30775	3069DA
30776	3069DB
30777	3069DC
30778	3069DD
30779	3069DE
30780	3069DF
30781	3069DG
30782	3069DH
30783	3069DI
30784	3069DJ
30785	3069DK
30786	3069DL
30787	3069DM
30788	3069DN
30789	3069DO
30790	3069DP
30791	3069DQ
30792	3069DR
30793	3069DS
30794	3069DT
30795	3069DU
30796	3069DV
30797	3069DW
30798	3069DX
30799	3069DY
30800	3069DZ
30801	3069EA
30802	3069EB
30803	3069EC
30804	3069ED
30805	3069EE
30806	3069EF
30807	3069EG
30808	3069EH
30809	3069EI
30810	3069EJ
30811	3069EK
30812	3069EL
30813	3069EM
30814	3069EN
30815	3069EO
30816	3069EP
30817	3069EQ
30818	3069ER
30819	3069ES
30820	3069ET
30821	3069EU
30822	3069EV
30823	3069EW
30824	3069EX

[illegible]

SAMPLE NUMBERS

DATE	RETURNS	7/1/85	6/27/85	7/1/85	6/27/85	7/1/85	7/1/85
TIME	822	852	1446	1502	748	304	828
							933
							1104
							1129

TIME	022	052	1446	1502	740	304	020	933	1104	1129
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50106 679KHN

7

UNK637 (06/6)

UNK654 (UG/G) 90113

0

UNX631 (UG) 69066

UNK636 (UE/G) 92088

0

UNK 841 (06/5)

UUK 530 (UG/6) 90019

4.83 2.15

2.15

1.06

4 0 23

4297

ENVIRONMENTAL SCIENCE & ENGINEERING				01/11/66				STATUS: PRELIMINARY			
PROJECT NUMBER 84936300				PROJECT NAME SECTION 36 RMA				PROJECT MANAGER: BILL FRASER			
FIELD GROUP: 3617H				FIELD GROUP LEADER: GEISLER/BERGOLL							
PARAMETERS: ALL				SAMPLES: ALL							
PARAMETERS	SUBJECT #	BLK	BLK	BLK	BLK	BLK	BLK	SAMPLE NUMBERS	BLK	BLK	BLK
		30652	505672	505680	505681	505690	505691	505692			
DATE	METHOD #	06/26/85	6/25/85	7/1/85	06/27/85	06/27/85	06/27/85	06/27/85			
TIME		1428	0	0	0	0	0	0			
DIMP (UG/G-DRY)	98645	<3.00	<0.500	<0.500	<3.00	<3.00	<3.00	<3.00			
DICHLORVUS (UG/G-DRY)	98646	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300			
HEXCLCYPENOL (UG/G-DRY)	98647	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00			
MALATHION (UG/G-DRY)	98648	<2.00	<0.600	<0.600	<2.00	<2.00	<2.00	<2.00			
ISODIAM (UG/G-DRY)	98649	<0.600	<0.300	<0.300	<0.600	<0.600	<0.600	<0.600			
1,4 DITHIANE (UG/G-DRY)	98650	<2.00	<0.300	<0.300	<2.00	<2.00	<2.00	<2.00			
DICYCLOPENTADIENE (U G/G-DRY)	98651	<6.00	<0.300	<0.300	<6.00	<6.00	<6.00	<6.00			
DBCP(MEHAGON) (UG/G-DRY)	98652	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005			<0.005
P-CLPHENYLMETHYLSULFI DE (UG/G-D)	98653	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300			
P-CLPHENYLMETHYLSULFO NE (UG/G-D)	98654	<1.00	<0.400	<0.400	<1.00	<1.00	<1.00	<1.00			
ATRAZINE (UG/G-DRY)	98655	<0.500	<0.700	<0.700	<0.500	<0.500	<0.500	<0.500			
SUPONA (UG/G-DRY)	98656	<0.900	<0.500	<0.500	<0.900	<0.900	<0.900	<0.900			
DMPP (UG/G-DRY)	98657	<3.00	<2.00	<2.00	<3.00	<3.00	<3.00	<3.00			
ETP-PARATHION (UG/G-DRY)	98658	<2.00	<0.700	<0.700	<2.00	<2.00	<2.00	<2.00			
CARBON TETRACHLORIDE (UG/G-DRY)	98660	<0.400			<0.400	<0.400	<0.400	<0.400			
CHLOROBENZENE (UG/G-DRY)	98661	<0.300			<0.300	<0.300	<0.300	<0.300			
CHLOROFORM (UG/G-DRY)	98662	<0.700			<0.700	<0.700	<0.700	<0.700			
1,1-DICHLORUETHANE (UG/G-DRY)	98663	<0.500			<0.500	<0.500	<0.500	<0.500			
1,2-DICHLOROETHANE (UG/G-DRY)	98664	<0.400			<0.400	<0.400	<0.400	<0.400			
BICYCLOHEPTADIENE (UG/G-DRY)	98666	<0.800			<0.800	<0.800	<0.800	<0.800			

ENVIRONMENTAL SCIENCE & ENGINEERING 01/11/86 STATUS: PRELIMINARY
 PROJECT NUMBER 84936300 PROJECT NAME SECTION 36 RHA
 FIELD GROUP: 3617M PROJECT MANAGER: BILL FRASER
 PARAMETERS: ALL SAMPLES: ALL FIELD GROUP LEADER: GEIS/LLR/BERGULL

PARAMETERS	STORET #	30652 505672	BLK 505680	BLK 505681	BLK 505690	BLK 505691	BLK 505692
DATE	METHOD #	06/26/85	6/25/85	7/1/85	06/27/85	06/27/85	06/27/85
TIME		1420	0	0	0	0	0
UNK634 (UG/G)	90086					IL	
UNK544 (UG/G)	90026					IL	
UNK629 (UG/G)	90082	1.02				IL	
UNK604 (UG/G)	90061					IL	
UNK621 (UG/G)	90075					IL	
UNK596 (UG/G)	90055					IL	
UNK601 (UG/G)	90058					IL	
UNK606 (UG/G)	90063					IL	
UNK612 (UG/G)	90068					IL	
UNK613 (UG/G)	90069					IL	
UNK617 (UG/G)	90072					IL	
UNK622 (UG/G)	90076					IL	
UNK608 (UG/G)	90065					IL	
UNK615 (UG/G)	90071					IL	
UNK614 (UG/G)	90070	0.508		1.82			
UNK635 (UG/G)	90087						
UNK602 (UG/G)	90059						
UNK545 (UG/G)	90027						2.76
UNK523 (UG/G)	90092		0.206				
UNK611 (UG/G)	90067						

STATUS: PRELIMINARY

PROJECT NUMBER: 84936300
FIELD GROUP: 3617X
PARAMETERS: ALL SAMPLE

PROJECT NAME SECTION 36 RMA
PROJECT MANAGER: BILL FRASER
FIELD GROUP LEADER: GEISZLER/BERGDOLL

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ENVIRONMENTAL SCIENCE & ENGINEERING

01/27/86

STATUS: PRELIMINARY

PROJECT NUMBER 84936300

FIELD GROUP: 3617X

PARAMETERS: ALL SAMPLES: ALL

PROJECT NAME SECTION 36 RMA
PROJECT MANAGER: BILL FRASER
FIELD GROUP LEADER: GEISZLER/BERGDOUL

PARAMETERS	STORET #	DATE	METHOD #	SAMPLE NUMBERS											
				3071A 505700	3071B 505701	3072A 505706	3072B 505707	3073A 505712	3073B 505713	3074A 505718	3074B 505719	3075A 505724	3075B 505725		
TRANS-1,2-DICHLOROLET ENE (UG/G-DRY)	98687 0	7/1/85	1421	NA	NA	721	732	735	749	1408	1422	829	848		
ETHYLBENZENE (UG/G-DRY)	98688 0		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
METHYLENE CHLORIDE (UG/G-DRY)	98689 0		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
TETRACHLOROETHENE (UG/G-DRY)	98690 0		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
TOLUENE (UG/G-DRY)	98691 0		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
1,1,1-TRICHLOROETHANE (UG/G-DRY)	98692 0		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
1,1,2-TRICHLOROETHANE (UG/G-DRY)	98693 0		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
TRICHLOROETHENE (UG/G-DRY)	98694 0		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
M-XYLENE (UG/G-DRY)	98695 0		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
MIBK (UG/G-DRY)	98696 0		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
DMS (UG/G-DRY)	98697 0		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
BENZENE (UG/G-DRY)	98699 0		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
O-AND/OR P-XYLENE (UG/G-DRY)	98700 0		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
PCPMSD2 (UG/G-DRY)	98703 0		<0.300	<0.300	<0.400	<0.400	<0.400	<0.300	<0.300	<0.400	<0.400	<0.300	<0.300		
COORDINATE N/S (STEP)	98392 0		183572	183572	183720	183720	183720	183720	183720	183875	183875	183847	183847		
COORDINATE E/W (STEP)	98393 0		2187699	2187699	2187552	2187552	2187552	2186949	2186949	2187407	2187407	2186801	2186801		
UNK633 (UG/G)	90085 0				0.435					0.332	0.733				
UNK635 (UG/G)	90087 0				0.871					0.221					
UNK542 (UG/G)	90024 0														
UNK629 (UG/G)	90082 0									1.99					

0.332 0.733

0.221

1.99

STATUS: PRELIMINARY

PROJECT NAME SECTION 36 RMA

PROJECT MANAGER: BILL FRASER

FIELD GROUP LEADER: GEISLER/BERGOLL

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STATUS: PRELIMINARY

PROJECT NAME SECTION 36 RMA

PROJECT MANAGER: BILL FRASER

FIELD GROUP LEADER: GEISLER/BERGDOFF

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STATUS: PRELIMINARY

PROJECT NAME SECTION 36 RMA
PROJECT MANAGER: BILL FRASER
FIELD GROUP LEADER: GEISZLER/BERGDOLL

FIELD GROUP LEADER: GEISLER/BERGOLL

[illegible]

STATUS: PRELIMINARY

PROJECT NAME SECTION 36 RMA
PROJECT MANAGER: BILL FRASER
FIELD GROUP LEADER: GEISZLER/BERGDOLL

[illegible]

STATUS: PRELIMINARY

PROJECT NAME SECTION 36 RMA

PROJECT MANAGER: BILL FRASER

FIELD GROUP LEADER: GEISZLER/BERGDOLL

138015

Q1174

800

90083

12076

99066

9116

93019

92097

90070

90092

92036

12106

96073

90105

90089

90123

★ 3.26

* 1.49

* 4.01

A 8.50

★ 1.05

ENVIRONMENTAL SCIENCE & ENGINEERING

01/27/86

STATUS: PRELIMINARY

PROJECT NUMBER 84936300
FIELD GROUP: 3617X
PARAMETERS: ALL

PROJECT NAME SECTION 36 RMA
PROJECT MANAGER: BILL FRASER
FIELD GROUP LEADER: GEISLER/BERGDOLL

PARAMETERS	STORET #	3080C 505756	3080D 505757	3081A 505760	3081B 505761	3082A 505766	3082B 505767	BLK 505760	BLK 505761	BLK 505762	BLK 505763
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DATE

7/2/85	7/2/85	7/2/85	7/2/85	7/2/85	7/2/85	7/2/85	7/2/85	7/1/85	7/8/85	7/10/85	7/9/85
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TIME

811	833	1252	1313	953	1006	0	0	0	0	0	0
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DIMP (UG/G-DRY)

98645	<0.500	<0.500	<3.00	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
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DICHLOROS (UG/G-DRY)

98646	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300
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HEXACHLOROCYCLOPENTADIENE (UG/G-DRY)

98647	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
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MALATHIOL (UG/G-DRY)

98648	<0.600	<0.600	<2.00	<2.00	<0.600	<0.600	<0.600	<0.600	<0.600	<0.600	<0.600
-------	--------	--------	-------	-------	--------	--------	--------	--------	--------	--------	--------

ISODRIN (UG/G-DRY)

98649	<0.300	<0.300	<0.600	<0.600	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300
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1,4 DITHIANE (UG/G-DRY)

98650	<0.300	<0.300	<2.00	<2.00	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300
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DICYCLOPENTADIENE (UG/G-DRY)

98651	<0.300	<0.300	<6.00	<6.00	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300
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DICP (NEMAGEN) (UG/G-DRY)

98652	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
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P-CLPHENYLMETHYLSULFI (UG/G-DRY)

98653	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300
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P-CLPHENYLMETHYLSULFU (UG/G-DRY)

98654	<0.400	<0.400	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400
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ATRAZINE (UG/G-DRY)

98655	<0.700	<0.700	<0.500	<0.500	<0.700	<0.700	<0.700	<0.700	<0.700	<0.700	<0.700
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SUPONA (UG/G-DRY)

98656	<0.500	<0.500	<0.900	<0.900	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
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DMHP (UG/G-DRY)

98657	<2.00	<2.00	<3.00	<3.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00
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ETP PARATHION (UG/G-DRY)

98658	<0.700	<0.700	<2.00	<2.00	<0.700	<0.700	<0.700	<0.700	<0.700	<0.700	<0.700
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CARBON TETRACHLORIDE (UG/G-DRY)

98659	<0.300	<0.300	NA	NA	NA	NA	NA	<0.300	NA	<0.300	NA
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CHLOROBENZENE (UG/G-DRY)

98660	<0.300	<0.300	NA	NA	NA	NA	NA	<0.300	NA	<0.300	NA
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CHLOROFORH (UG/G-DRY)

98661	<0.300	<0.300	NA	NA	NA	NA	NA	0.945	NA	<0.300	NA
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1,1-DICHLOROETHANE (UG/G-DRY)

98662	<0.300	<0.300	NA	NA	NA	NA	NA	<0.300	NA	<0.300	NA
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1,2-DICHLOROETHANE (UG/G-DRY)

98663	<0.300	<0.300	NA	NA	NA	NA	NA	<0.300	NA	<0.300	NA
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BICYCLOHEPTADIENE (UG/G-DRY)

98664	<0.300	<0.300	NA	NA	NA	NA	NA	<0.300	NA	<0.300	NA
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STATUS: PRELIMINARY

PROJECT NUMBER 94936300

FIELD GROUP: 3617X

PARAMILKS: ALL
SAMPLES: ALL

PROJECT NAME SECTION 36 RMA

PROJECT MANAGER: BILL FRASER

FIELD GROUP LEADER: GEISZLER/BERGDOLL

[illegible]

METHOD

[illegible]

THE	811	833	1252	1313	953	1006	0	0	0
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TRANS-1,2-DICHLORUE 98687

0 0-9/9M)EN3
10000 1300000000-767-010001

ETHYL BENZENE

	0	<0.300	NA	NA	0.903
(0676-081)					
HYPHENATED HYPHENATED	93669	<0.300	NA	NA	0.903

(UIC-9706)

Chemical	NA	NA	NA	NA	NA	NA
TETRACHLORETHENE	98690	<0.300	<0.300	<0.300	<0.300	<0.300

16986 3X30701

(UG/G-DRY) 0

771-1 KILGORE HAN 7007L
E 11676-11 0

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

(U-9/GN)3

Chemical Name	98694	<0.300	NA	NA	<0.300	NA	NA	<0.300
TRICHLOROETHYLENE	98694	<0.300	NA	NA	<0.300	NA	NA	<0.300

93695
M-XYLENE

UG/C-DRY 0

(UG/G-DRY) 0

	98697	<0.300	NA	NA	NA	<0.300
10070-DMT						

REVENUE (JAN-97) 00600
(JULY-DRY) 00000

BENZENE CUMULATIVE	98699	<0.300	NA
			NA
			NA
			NA

0-AND/OR P-XYLENE 93700

[illegible]

0

COORDINATE, N/S(SIP)	98392	184023	184017	184017	184168
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COORDINATE, E/H(S/P) 9A393

[illegible]

UHK633 (GG/G)

	0-619	0-765
0-619	0-765	

100

UNK542 (C/G/G) 90024

629 K 629 (UG/G) 9:00a

0
Total
16/09/2007

STATUS: PRELIMINARY

PROJECT NUMBER 84936300
FIELD GROUP: 3617X
PARAMETERS: ALL SAMPLES: ALL

PROJECT NAME SECTION 36 RMA
PROJECT MANAGER: BILL FRASER
FIELD GROUP LEADER: GEISZLER/BERGDOLL

[illegible]

ENVIRONMENTAL SCIENCE & ENGINEERING

01/27/86

STATUS: PRELIMINARY

PROJECT NAME SECTION 36 RMA
PROJECT MANAGER: BILL FRASER
FIELD GROUP LEADER: GEISLER/BERGDOLL

PROJECT NUMBER 84936300
FIELD GROUP: 3617X
PARAMETERS: ALL SAMPLES: ALL

SAMPLE NUMBERS

PARAMETERS	STORET #	BLK 505790	BLK 505791	BLK 505792
DATE	METHOD #	07/02/85	07/02/85	07/02/85
TIME		0	0	0
SAMPLE TYPE	71999	SO	SO	SO
SAMPLE DEPTH(CM)	99758	0	0	0
SITE TYPE 1	99759	QCHB	QCHB	QCHB
INSTALLATION CODE	99720	RK	RK	RK
SAMPLING TECHNIQUE	72005	G	G	G
MOISTURE(ZHET HT)	70320	2.0	2.0	2.0
CADMIUM,SED (UG/G-DRY)	1028	NA	NA	NA
CH,SOIL (UG/G-DRY)	99584	0		
COPPER,SED (UG/G-DRY)	1043	0		
LEAD,SED (UG/G-DRY)	1052	0		
ZINC,SED (UG/G-DRY)	1093	0		
ARSENIC,SED (UG/G-DRY)	1003	0		
MERCURY,SED (UG/G-DRY)	71921	<0.07		
ALDRIN,SED (UG/G-DRY)	98356	<0.500		
DIELDRIN(UG/G-DRY)	98365	<0.600		
DDE,PP*(UG/G-DRY)	98364	<2.00		
ENDRIN (UG/G-DRY)	98369	<4.00		
CHLORDANE,SED(UG/G-DRY)	98361	<6.00		
DDE,PP*(UG/G-DRY)	98363	<0.500		
1,4 OXATHIANE (UG/G-DRY)	98644	<0.500		

ENVIRONMENTAL SCIENCE & ENGINEERING

01/27/86

STATUS: PRELIMINARY

PROJECT NUMBER 84936300
FIELD GROUP: 3617X
PARAMETERS: ALL

PROJECT NAME SECTION 36 RMA
PROJECT MANAGER: BILL FRASER
FIELD GROUP LEADER: GEISZLER/BERGDOLL

SAMPLE NUMBERS

PARAMETERS	STORET #	BLK 505790	BLK 505791	BLK 505792
DATE	METHOD #	07/02/85	07/02/85	07/02/85
TIME		0	0	0
DIMP (UG/G-DRY)	98645	<3.00		
DICHLOROS (UG/G-DRY)	98646	<0.300		
HEXCLCYPENDI (UG/G-DRY)	98647	<1.00		
MALATHION (UG/G-DRY)	98648	<2.00		
ISODRIN (UG/G-DRY)	98649	<0.600		
1,4 DITHIANE (UG/G-DRY)	98650	<2.00		
DICYCLOPENTADIENE (U G/G-DRY)	98651	<6.00		
DACP(NEMAGON) (UG/G-DRY)	98652	<0.005		
P-CLPHENYLETHIUSULFI	98653	<0.300		
DL(UG/G-D)	98654	<1.00		
P-CLPHENYLETHIUSULFO NL(UG/G-D)	98655	<0.500		
ATRAZINE (UG/G-DRY)	98656	<0.900		
SUPONA (UG/G-DRY)	98657	<3.00		
DHMP (UG/G-DRY)	98658	<2.00		
EIP*PARATHION (UG/G-DRY)	98680			
CARBON TETRACHLORIDE (UG/G-DRY)	98681			
CHLOROBENZENE (UG/G-DRY)	98682			
CHLOROFORM (UG/G-DRY)	98683			
1,1-DICHLOROMETHANE (UG/G-DRY)	98684			
1,2-DICHLOROETHANE (UG/G-DRY)	98686			
BICYCLOHEPTADIENE (UG/G-DRY)				

ENVIRONMENTAL SCIENCE & ENGINEERING

01/27/86

STATUS: PRELIMINARY

PROJECT NUMBER 84936300

FIELD GROUP: 361/X

PARAMETERS: ALL SAMPLES: ALL

PROJECT NAME SECTION 36 RMA

PROJECT MANAGER: BILL FRASER

FIELD GROUP LEADER: GEISLER/BERGDOLL

SAMPLE NUMBERS

PARAMETERS	STORET #	BLK 505790	BLK 505791	BLK 505792
DATE	METHOD #	07/02/85	07/02/85	07/02/85
TIME		0	0	0
TRANS-1,2-DICHLOROETHANE (UG/G-DRY)	98687			
ETHYLBENZENE (UG/G-DRY)	98688			
METHYLENE CHLORIDE (UG/G-DRY)	98689			
TETRACHLOROETHENE (UG/G-DRY)	98690			
TOLUENE (UG/G-DRY)	98691			
1,1,1-TRICHLOROETHANE (UG/G-DRY)	98692			
1,1,2-TRICHLOROETHANE (UG/G-DRY)	98693			
TRICHLOROETHENE (UG/G-DRY)	98694			
M-XYLENE (UG/G-DRY)	98695			
MIBK (UG/G-DRY)	98696			
DMS (UG/G-DRY)	98697			
BENZENE (UG/G-DRY)	98699			
O-AND/OR P-XYLENE (UG/G-DRY)	98700			
PCPMSU2 (UG/G-DRY)	98703			
COORDINATE N/S (STP)	98392			
COORDINATE E/W (STP)	98393			
UNK633 (UG/G)	90085			
UNK635 (UG/G)	90087			
UNK542 (UG/G)	90024			
UNK629 (UG/G)	90082			

ENVIRONMENTAL SCIENCE & ENGINEERING

01/27/86

STATUS: PRELIMINARY

PROJECT NUMBER 84936300

PROJECT NAME SECTION 36 RHA

FIELD GROUP: 3617X

PROJECT MANAGER: BILL FRASER

PARAMETERS: ALL

FIELD GROUP LEADER: GEISLER/BERGDOHL

SAMPLE NUMBERS

PARAMETERS	STORET #	BLK	BLK	BLK
DATE	METHOD #	07/02/85	07/02/85	07/02/85
TIME		0	0	0
UNK631 (UG/G)	90083			
UNK533 (UG/G)	90021	1.22		
UNK609 (UG/G)	90066			
UNK513 (UG/G)	90116			
UNK530 (UG/G)	90019			
UNK555 (UG/G)	90097			
UNK614 (UG/G)	90070			
UNK523 (UG/G)	90092			
UNK567 (UG/G)	90036			
UNK575 (UG/G)	90121			
UNK618 (UG/G)	90073			
UNK619 (UG/G)	90105			
UNK637 (UG/G)	90089			
UNK538 (UG/G)	90123			

ENVIRONMENTAL SCIENCE & ENGINEERING

01/11/86

STATUS: PRELIMINARY

PROJECT NUMBER 84936300

FIELD GROUP: 3617V

PARAMETERS: ALL SAMPLES: ALL

PROJECT NAME SECTION 36 RMA
PROJECT MANAGER: BILL FRASER
FIELD GROUP LEADER: GLISZLER/BERGOTTL

PARAMETERS	SURET #	3083A 505800	3083B 505801	3083C 505802	3083D 505803	3083E 505804	3084A 505806	3084B 505807	3084C 505808	3084D 505809	3085A 505812
DATE	METHOD #	07/03/85	07/03/85	07/03/85	07/03/85	07/03/85	7/9/85	7/9/85	7/9/85	7/9/85	7/9/85
TIME		013	026	044	066	046	1009	1027	1249	1137	724
SAMPLE TYPE	71999 0	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO
SAMPLE DEPTH(CM)	99758 0	0	122	274	427	579	0	122	274	427	0
SITE TYPE 1	99759 0	BORE	BORE	BORE	BORE	BORE	BORE	BORE	BORE	BORE	BORE
INSTALLATION CODE	99720 0	RK	RK	RK	RK	RK	RK	RK	RK	RK	RK
SAMPLING TECHNIQUE	72005 0	S	S	S	S	S	S	S	S	S	S
MOISTURE(2NET WT)	70320 0	6.3	5.5	6.4	12.7	20.2	3.0	3.6	7.0	16.3	3.7
CADMIUM,SED (UG/G- DRY)	1028 0	6.9	<0.5	<0.5	<0.5	<0.5	<0.9	<0.9	<0.9	<0.9	<0.9
CR,SOIL (UG/G-DRY)	99584 0	16	14	14	15	12	8	9	9	<7	14
COPPER,SED (UG/G- DRY)	1043 0	14	13	15	15	22	5	5	6	5	17
LEAD,SED (UG/G-DRY)	1052 0	20	<16	<16	<16	<16	<17	<17	<17	<17	32
ZINC,SED (UG/G-DRY)	1093 0	48	39	44	50	51	27	31	34	36	65
ARSENIC,SED (UG/G- DRY)	1003 0	<5.2	<5.2	<5.2	<5.2	<5.2	<4.7	<4.7	<4.7	<4.7	7.3
MERCURY,SED (UG/G- DRY)	71921 0	0.36	<0.07	<0.07	<0.07	<0.07	<0.05	<0.05	<0.05	<0.05	0.06
ALORIN,SED (UG/G- DRY)	98356 0	<0.500	<0.500	<0.500	<0.500	<0.500	<0.900	<0.900	<0.900	<0.900	<0.900
OTELORIN(UG/G-DRY)	98365 0	<0.600	<0.600	<0.600	<0.600	<0.600	<0.300	<0.300	<0.300	<0.300	<0.300
DDT,PP(UG/G-DRY)	98364 0	<2.00	<2.00	<2.00	<2.00	<2.00	<0.400	<0.400	<0.400	<0.400	<0.400
ENDRIN (UG/G-DRY)	98369 0	<4.00	<4.00	<4.00	<4.00	<4.00	<0.700	<0.700	<0.700	<0.700	<0.700
CHLORDANE,SED(UG/G- DRY)	98361 0	<6.00	<6.00	<6.00	<6.00	<6.00	<1.00	<1.00	<1.00	<1.00	<1.00
DDE,PP(UG/G-DRY)	98363 0	2.87	<0.500	<0.500	<0.500	<0.500	<0.300	<0.300	<0.300	<0.300	<0.300
1,4 OXATHIANE (UG/G- DRY)	98644 0	<0.500	<0.500	<0.500	<0.500	<0.500	<0.300	<0.300	<0.300	<0.300	<0.300

ENVIRONMENTAL SCIENCE & ENGINEERING

01/11/86

STATUS: PRELIMINARY

PROJECT NUMBER 84936300
FIELD GROUP: 3617V
PARAMETERS: ALL SAMPLES: ALL

PROJECT NAME SECTION 36 RMA
PROJECT MANAGER: BILL FRASER
FIELD GROUP LEADER: GETSZLER/BERGQUIL

PARAMETERS	STORET #	3083A 505800	3083B 505801	3083C 505802	3083D 505803	3083E 505804	3084A 505806	3084B 505807	3084C 505808	3084D 505809	3085A 505812
DATE	METHOD #	07/03/85	07/03/85	07/03/85	07/03/85	07/03/85	7/9/85	7/9/85	7/9/85	7/9/85	7/9/85
TIME		813	826	844	906	946	1009	1027	1049	1137	124
DIMP (UG/G-DRY)	98645	<3.00	<3.00	<3.00	<3.00	<3.00	<0.500	<0.500	<0.500	<0.500	<0.500
DICHLORVOS (UG/G-DRY)	98646	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300
HEXACHLOROCYCLOPENTADIENE (UG/G-DRY)	98647	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
MALATHION (UG/G-DRY)	98648	<2.00	<2.00	<2.00	<2.00	<2.00	<0.600	<0.600	<0.600	<0.600	<0.600
ISODRIN (UG/G-DRY)	98649	<0.600	<0.600	<0.600	<0.600	<0.600	<0.300	<0.300	<0.300	<0.300	<0.300
1,4 DITHIANE (UG/G-DRY)	98650	<2.00	<2.00	<2.00	<2.00	<2.00	<0.300	<0.300	<0.300	<0.300	<0.300
DICYCLOPENTADIENE (UG/G-DRY)	98651	<6.00	<6.00	<6.00	<6.00	<6.00	<0.300	<0.300	<0.300	<0.300	<0.300
DBCP (HEXAGON) (UG/G-DRY)	98652	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
P-CLPHEXYLTHESULFIDE (UG/G-DRY)	98653	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300
P-CLPHEXYLTHESULFIDE (UG/G-DRY)	98654	<1.00	<1.00	<1.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400
ATRAZINE (UG/G-DRY)	98655	<0.500	<0.500	<0.500	<0.500	<0.500	<0.700	<0.700	<0.700	<0.700	<0.700
SUPONA (UG/G-DRY)	98656	<0.900	<0.900	<0.900	<0.900	<0.900	<0.500	<0.500	<0.500	<0.500	<0.500
DHNP (UG/G-DRY)	98657	<3.00	<3.00	<3.00	<3.00	<3.00	<2.00	<2.00	<2.00	<2.00	<2.00
ETV*PARATHION (UG/G-DRY)	98658	<2.00	<2.00	<2.00	<2.00	<2.00	<0.700	<0.700	<0.700	<0.700	<0.700
CARBON TETRACHLORIDE (UG/G-DRY)	98659	NA	NA	NA	NA	<0.400	NA	NA	<0.300	<0.300	NA
CHLOROBENZENE (UG/G-DRY)	98660	NA	NA	NA	NA	<0.300	NA	NA	<0.300	<0.300	NA
CHLOROFURM (UG/G-DRY)	98661	NA	NA	NA	NA	<0.700	NA	NA	<0.300	<0.300	NA
1,1-DICHLOROETHANE (UG/G-DRY)	98662	NA	NA	NA	NA	<0.500	NA	NA	<0.300	<0.300	NA
1,2-DICHLOROETHANE (UG/G-DRY)	98663	NA	NA	NA	NA	<0.400	NA	NA	<0.300	<0.300	NA
BICYCLOHEPTADIENE (UG/G-DRY)	98664	NA	NA	NA	NA	<0.600	NA	NA	<0.300	<0.300	NA
	98665	NA	NA	NA	NA	<0.600	NA	NA	<0.300	<0.300	NA

ENVIRONMENTAL SCIENCE & ENGINEERING

01/11/86

STATUS: PRELIMINARY

PROJECT NUMBER 84936300
FIELD GROUP: 36177
PARAMETERS: ALL

PROJECT NAME SECTION 36 RMA
PROJECT MANAGER: BILL FRASER
FIELD GROUP LEADER: GLISZLER/BERGDELL

SAMPLES: ALL

SAMPLE NUMBERS

PARAMETERS	STORET #	3083A 505800	3083B 505801	3083C 505802	3083D 505803	3083E 505804	3084A 505806	3084B 505807	3084C 505808	3084D 505809	3085A 505812
DATE	07/03/85	07/03/85	07/03/85	07/03/85	07/03/85	07/03/85	7/9/85	7/9/85	7/9/85	7/9/85	7/9/85
TIME	813	826	844	906	946	1009	1027	1049	1137	124	
UNK609 (UG/G)	90066	NA									
UNK524 (UG/G)	90015	NA									
UNK533 (UG/G)	90021										
UNK557 (UG/G)	90031	NA									
UNK612 (UG/G)	90068										
UNK615 (UG/G)	90071										
UNK637 (UG/G)	90089										
UNK523 (UG/G)	90092										
UNK585 (UG/G)	90102										
UNK636 (UG/G)	90088										
UNK660 (UG/G)	90120										
UNK532 (UG/G)	90020										
UNK618 (UG/G)	90073										
UNK633 (UG/G)	90085										
UNK513 (UG/G)	90116										
UNK639 (UG/G)	90122										
UNK638 (UG/G)	90090										

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ENVIRONMENTAL SCIENCE & ENGINEERING

01/11/86

STATUS: PRELIMINARY

PROJECT NUMBER 84936300

FIELD GROUP: 3617Y

PARAMETERS: ALL

PROJECT NAME SECTION 36 RHA
PROJECT MANAGER: BILL FRASER
FIELD GROUP LEADER: GEISLER/DIRCCHUL

SAMPLES: ALL

PARAMETERS	STORE #	30858 505813	30864 505818	30868 505819	3087A 505824	3087B 505825	3088A 505830	30883 505831	3089A 505836	3089B 505837	3091A 505848
DATE	METHOD #	7/9/85	07/03/85	07/03/85	7/8/85	7/8/85	7/8/85	7/8/85	6/25/85	6/25/85	6/25/85
TIME		741	1101	1117	942	954	1025	1047	1300	1010	935
TRANS-1,2-DICHLOROETHENE (UG/G-DRY)	98687	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ETHYLBENZENE (UG/G-DRY)	98688	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
METHYLENE CHLORIDE (UG/G-DRY)	98689	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE (UG/G-DRY)	98690	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOLUENE (UG/G-DRY)	98691	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE (UG/G-DRY)	98692	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE (UG/G-DRY)	98693	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROETHENE (UG/G-DRY)	98694	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
M-XYLENE (UG/G-DRY)	98695	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MIBK (UG/G-DRY)	98696	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DMS	98697	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZENE (UG/G-DRY)	98699	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
O-AND/OR P-XYLENE (UG/G-DRY)	98700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCPMS02 (UG/G-DRY)	98703	<0.300	<0.400	<0.0	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300
COORDINATE N/S/SIP	98392	184319	184285	184265	184470	184470	184617	184617	182524	182524	182522
COORDINATE E/W/SIP	98393	2186202	2186800	2186800	2186503	2186503	2186205	2186205	2186502	2186502	2186502
UNK620 (UG/G)	90074		NA	NA							
UNK635 (UG/G)	90087		2.29	66.8							
UNK502 (UG/G)	90045			107							
UNK576 (UG/G)	90040			80.1							

ENVIRONMENTAL SCIENCE & ENGINEERING

01/11/86

STATUS: PRELIMINARY

PROJECT NUMBER 34936300
FIELD GROUP: 3617V
PARAMETERS: ALL

PROJECT NAME SECTION 36 RMA
PROJECT MANAGER: BILL FRASER
FIELD GROUP LEADER: GEISZLER/BERGQUIST

PARAMETERS	SURFET #	3091B 505849	3086 505872	BLK 505880	BLK 505881	BLK 505882	BLK 505890	BLK 505891	BLK 505892
DATE	METHOD #	6/25/85	07/03/85	6/25/85	7/8/85	7/9/85	07/03/85	07/03/85	07/03/85
TIME		819	1111	0	0	0	0	0	0
SAMPLE TYPE	72999	SO	SO	SO	SO	SO	SO	SO	SO
SAMPLE DEPTH(CM)	99758	122	61	0	0	0	0	0	0
SITE TYPE 1	99759	BORE	BURE	QCM8	QCM8	QCM8	QCM8	QCM8	QCM8
INSTALLATION CODE	99720	RK	RK	RK	RK	RK	RK	RK	RK
SAMPLING TECHNIQUE	72005	S	S	G	G	G	G	G	G
MOISTURE(2MET WT)	70320	11.3	18.4	2.3	2.3	2.3	2.0	2.0	2.0
CADMIUM,SED (UG/G-DRY)	1028	<0.9	9.6	NA	NA	NA	<0.5	NA	NA
CR,SOIL (UG/G-DRY)	99584	11	1450				15		
COPPER,SED (UG/G-DRY)	1043	7	657				13		
LEAD,SED (UG/G-DRY)	1052	<17	7100				<16		
ZINC,SED (UG/G-DRY)	1093	39	11800				37		
ARSENIC,SED (UG/G-DRY)	1003	4.9	<5.2				<5.2		
MERCURY,SED (UG/G-DRY)	71921	<0.05	<0.07				<0.07		
ALORIN,SED (UG/G-DRY)	98356	<0.900	<50.0				<0.500		
DIELORIN(UG/G-DRY)	98365	<0.300	<60.0				<0.600		
DDT,PP* (UG/G-DRY)	98364	<0.400	<200				<2.00		
ENDRIN (UG/G-DRY)	98369	<0.700	<400				<4.00		
CHLOROCARE,SED(UG/G-DRY)	98361	<1.00	<600				<6.00		
DDT,PP* (UG/G-DRY)	98363	<0.300	<50.0				<0.500		
1,4 OXATHIANE (UG/G-DRY)	98644	<0.300	<50.0				<0.500		

ENVIRONMENTAL SCIENCE & ENGINEERING

01/11/86

STATUS: PRELIMINARY

PROJECT NUMBER 84936300
FIELD GROUP: 3617Y
PARAMETERS: ALL

PROJECT NAME SECTION 36 RMA
PROJECT MANAGER: BILL FRASER
FIELD GROUP LEADER: GLISZLER/BERGBOHL

PARAMETERS	STORET #	3091B 505849	3086 505872	BLK 505880	BLK 505881	SAMPLE NUMBERS BLK 505882	BLK 505891	DLK 505892
DATE	METHOD #	6/25/85	07/03/85	6/25/85	7/8/85	7/9/85	07/03/85	07/03/85
TIME		819	1111	0	0	0	0	0
DIMP (UG/G-DRY)	98645	<0.500	<300				<1.00	
DICHLORVUS (UG/G-DRY)	98646	<0.300	<30.0				<0.300	
HEXCLCYPENDI (UG/G-DRY)	98647	<1.00	<100				<1.00	
HALATHION (UG/G-DRY)	98648	<0.600	<200				<2.00	
ISODRIN (UG/G-DRY)	98649	<0.300	<60.0				<0.600	
1,4 DITHIANE (UG/G-DRY)	98650	<0.300	<200				<2.00	
DICYCLOPENTADIENE (U G/G-DRY)	98651	<0.300	<600				<6.00	
DBCP (NEMAGU) (UG/G-DRY)	98652	0.031	0.109				<0.005	
P-CLPHEMETHYSULF1 (UG/G-DRY)	98653	<0.300	<30.0				<0.300	
P-CLPHEMETHYSULF2 (UG/G-DRY)	98654	<0.400	<100				<1.00	
ATRAZINE (UG/G-DRY)	98655	<0.700	<50.0				<0.500	
SUPONA (UG/G-DRY)	98656	<0.500	<90.0				<0.900	
DIMP (UG/G-DRY)	98657	<2.00	<300				<3.00	
ETYOPARATHION (UG/G-DRY)	98658	<0.700	<200				<2.00	
CARBON TETRACHLORIDE (UG/G-DRY)	98680	NA	NA	<0.300			<0.400	
CHLOROBENZENE (UG/G-DRY)	98681	NA	NA	<0.300			<0.300	
CHLOROFORM (UG/G-DRY)	98682	NA	NA	<1.10			<0.700	
1,1-DICHLOROETHANE (UG/G-DRY)	98683	NA	NA	<0.300			<0.500	
1,2-DICHLOROETHANE (UG/G-DRY)	98684	NA	NA	<0.300			<0.400	
81CYCLOHEPTADIENE (UG/G-DRY)	98686	NA	NA	<0.300			<0.600	

ENVIRONMENTAL SCIENCE & ENGINEERING

01/11/86

STATUS: PRELIMINARY

PROJECT NUMBER 84936300
FIELD GROUP: 3617Y
PARAMETERS: ALL

PROJECT NAME SECTION 36 RMA
PROJECT MANAGER: BILL TRASK
FIELD GROUP LEADER: GEISZLER/BERGBOHL

PARAMETERS	SOURCE #	30919 505849	3086 505872	BLK 505880	BLK 505881	SAMPLE NUMBERS BLK 505882	BLK 505890	BLK 505891	BLK 505892
DATE	METHOD #	6/25/85	07/03/85	6/25/85	7/8/85	7/9/85	07/03/85	07/03/85	07/03/85
TIME		819	1111	0	0	0	0	0	0
TRANS-1,2-DICHLOROETHENE (UG/G-DRY)	98687	NA	NA	<0.300			<0.600		
ETHYLBENZENE (UG/G-DRY)	98688	NA	NA	<0.300			<0.400		
METHYLENE CHLORIDE (UG/G-DRY)	98689	NA	NA	<0.869					
TETRACHLOROETHENE (UG/G-DRY)	98690	NA	NA	<0.300			<0.500		
TOLUENE (UG/G-DRY)	98691	NA	NA	<0.300			<0.300		
1,1,1-TRICHLOROETHANE (UG/G-DRY)	98692	NA	NA	<0.760			<0.500		
1,1,2-TRICHLOROETHANE (UG/G-DRY)	98693	NA	NA	<0.300			<0.600		
TRICHLOROETHENE (UG/G-DRY)	98694	NA	NA	<0.300			<0.600		
M-XYLENE (UG/G-DRY)	98695	NA	NA	<0.300			<0.300		
MIBK (UG/G-DRY)	98696	NA	NA	<0.500			<0.400		
DMS (UG/G-DRY)	98697	NA	NA	<0.300			<0.400		
BENZENE (UG/G-DRY)	98699	NA	NA	<0.300			<1.00		
O-AND/OR P-XYLENE (UG/G-DRY)	98700	NA	NA	<0.500			<0.500		
PCP/SO2 (UG/G-DRY)	98703	<0.300	<0.0				<0.400		
COORDINATE N/S (SIP)	98392	182222	184285						
COORDINATE E/W (SIP)	98393	2186652	2186800						
UNK620 (UG/G)	90074	NA							
UNK635 (UG/G)	90087								1.02
UNK582 (UG/G)	90045		270						
UNK576 (UG/G)	90040		294						

ENVIRONMENTAL SCIENCE & ENGINEERING

01/11/86

STATUS: PRELIMINARY

PROJECT NUMBER 84936360

FIELD GROUP: 36177

PARAMETERS: ALL SAMPLES: ALL

PROJECT NAME SECTION 36 RMA

PROJECT MANAGER: BILL FRASER

FIELD GROUP LEADER: GEISLER/88EGG011

PARAMETERS	SHEET #	DATE	TIME	SAMPLE NUMBERS				BLK	BLK	BLK	BLK
				30918	3086	BLK	BLK				
UNK580 (UG/G)	90644	6/25/85	019	505849	505872	505880	505881	505882	505890	505891	505892
UNK589 (UG/G)	90650	07/03/85	1111								
UNK632 (UG/G)	90084	07/03/85									
UNK614 (UG/G)	90678	07/03/85									
UNK629 (UG/G)	90082	07/03/85									
UNK579 (UG/G)	90643	07/03/85									
UNK577 (UG/G)	90041	07/03/85									
UNK578 (UG/G)	90042	07/03/85									
UNK623 (UG/G)	90077	07/03/85									
UNK525 (UG/G)	90016	07/03/85									
UNK562 (UG/G)	90033	07/03/85									
UNK567 (UG/G)	90036	07/03/85									
UNK569 (UG/G)	90038	07/03/85									
UNK574 (UG/G)	90039	07/03/85									
UNK586 (UG/G)	90049	07/03/85									
UNK591 (UG/G)	90051	07/03/85									
UNK594 (UG/G)	90053	07/03/85									
UNK595 (UG/G)	90054	07/03/85									
UNK600 (UG/G)	90057	07/03/85									
UNK605 (UG/G)	90062	07/03/85									

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1.02

ENVIRONMENTAL SCIENCE & ENGINEERING

01/11/86

STATUS: PRELIMINARY

PROJECT NUMBER 84936300

PROJECT NAME SECTION 36 RMA

FIELD GROUP: 36177 SAMPLES: ALL

PROJECT MANAGER: BILL FRASER
FIELD GROUP LEADER: GEISLER/BELFORD

PARAMETERS	STORET #	30918 505849	3006 505872	BLK 505880	BLK 505881	SAMPLE NUMBERS BLK 505882 BLK 505890 BLK 505891 BLK 505892
DATE	METHOD #	6/25/85	07/03/85	6/25/85	7/08/85	7/9/85 07/03/85 07/03/85 07/03/85
TIME		819	1111	0	0	0 0 0 0
UNK609 (UG/G)	90066					
UNK524 (UG/G)	90015		637			1.02
UNK533 (UG/G)	90021					0.408
UNK557 (UG/G)	90031					
UNK612 (UG/G)	90066					
UNK615 (UG/G)	90071					
UNK637 (UG/G)	90089					
UNK523 (UG/G)	90092	▲ 0.261				
UNK585 (UG/G)	90102	▲ 0.506				
UNK636 (UG/G)	90088	▲ 0.727				
UNK660 (UG/G)	90126					
UNK532 (UG/G)	90020					
UNK618 (UG/G)	90073					
UNK633 (UG/G)	90065	▲ 0.392				
UNK513 (UG/G)	90116					
UNK639 (UG/G)	90122					
UNK638 (UG/G)	90090					

ENVIRONMENTAL SCIENCE & ENGINEERING				01/11/86				STATUS: PRELIMINARY			
PROJECT NUMBER 84936300 FIELD GROUP: 36172 PARAMETERS: ALL SAMPLES: ALL				PROJECT NAME SECTION 36 RMA PROJECT MANAGER: BILL FRASER FIELD GROUP LEADER: GEISLER/BERGDOHL							
PARAMETERS	STURET #	3095A 505900	3095B 505901	3096A 505906	3096B 505907	3097A 505912	3097B 505913	3098A 505918	3098B 505919	3099A 505924	3099B 505925
DATE	METHOD #	07/11/85	07/11/85	07/11/85	07/11/85	7/10/85	7/10/85	7/10/85	7/10/85	6/24/85	6/25/85
TIME		828	846	725	740	1109	1129	958	1012	819	843
SAMPLE TYPE	71999	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO
SAMPLE DEPTH(CM)	99758	0	122	0	122	0	122	0	122	0	122
SITE TYPE 1	99759	BORE	BORE	BORE	BORE	BORE	BORE	BORE	BORE	BORE	BORE
INSTALLATION CODE	99720	RK	RK	RK	RK	RK	RK	RK	RK	RK	RK
SAMPLING TECHNIQUE	72005	S	S	S	S	S	S	S	S	S	S
MOISTURE(ZMET MT)	70320	7.0	15.2	11.4	13.7	12.9	17.4	5.3	19.4	12.8	12.3
CADMIUM,SED (UG/G-DRY)	1028	0.7	<0.5	<0.5	0.8	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9
CR,SOIL (UG/G-DRY)	99584	15	11	16	18	7	<7	10	22	14	10
COPPER,SED (UG/G-DRY)	1043	17	13	22	17	7	<5	7	8	9	7
LEAD,SED (UG/G-DRY)	1052	20	<16	<16	<16	25	<17	18	<17	22	<17
ZINC,SED (UG/G-DRY)	1093	52	41	71	45	62	34	37	43	47	36
ARSENIC,SED (UG/G-DRY)	1003	21	<5.2	<5.2	29	6.2	<4.7	5.1	5.4	4.8	<4.7
MERCURY,SED (UG/G-DRY)	11921	0.09	<0.07	<0.07	<0.07	0.13	<0.05	0.07	<0.05	<0.05	<0.05
ALDRIN,SED (UG/G-DRY)	98356	<0.500	<0.500	<0.500	<0.500	<0.900	0.966	<0.900	<0.900	<0.900	6.31
DIELDRIN(UG/G-DRY)	98365	<0.600	<0.600	<0.600	<0.600	<0.300	0.616	<0.300	<0.300	<0.300	<0.300
DDT,PP* (UG/G-DRY)	98364	<2.00	<2.00	<2.00	<2.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400
ENDRIN (UG/G-DRY)	98369	<4.00	<4.00	<4.00	<4.00	<0.700	<0.700	<0.700	<0.700	<0.700	<0.700
CHLORDANE,SED(UG/G-DRY)	98361	<6.00	<6.00	<6.00	<6.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
DDE,PP* (UG/G-DRY)	98363	<0.500	<0.500	<0.500	<0.500	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300
1,4 OXATHIANE (UG/G-DRY)	98644	<0.500	<0.500	<0.500	<0.500	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300

ENVIRONMENTAL SCIENCE & ENGINEERING			01/11/86			STATUS: PRELIMINARY		
PROJECT NUMBER 04936300			PROJECT NAME SECTION 36 RMA			PROJECT MANAGER: BILL FRASER		
FIELD GROUP: 36172			FIELD GROUP LEADER: GILSZLER/BERGJILL					
PARAMETERS: ALL			SAMPLES: ALL					
PARAMETERS	STORET #	3095A 505900	3095B 505901	3096A 505906	3096B 505907	SAMPLE NUMBERS		
						3097A 505912	3097B 505913	3098A 505918
								3098B 505919
DATE	METHOD #	07/11/85	07/11/85	07/11/85	07/11/85	7/10/85	7/10/85	7/10/85
TIME		828	846	725	740	1109	1129	1312
DIMP (UG/G-DRY)	98645	<3.00	<3.00	<3.00	<3.00	4.47	<0.500	<0.500
DICHLOROUS (UG/G-DRY)	98646	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300
HEXACHLOROPEND (UG/G-DRY)	98647	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
MALATHION (UG/G-DRY)	98648	<2.00	<2.00	<2.00	<2.00	<0.600	<0.600	<0.600
ISODRIN (UG/G-DRY)	98649	<0.600	<0.600	<0.600	<0.600	<0.300	<0.300	<0.300
1,4 DITHIANE (UG/G-DRY)	98650	<2.00	<2.00	<2.00	<2.00	<0.300	<0.300	<0.300
DICYCLOPENTADIENE (U G/G-DRY)	98651	<6.00	<6.00	<6.00	<6.00	<0.300	<0.300	<0.300
DBCP (NEMAGON) (UG/G-DRY)	98652	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.013
P-CLPHENYLETHYSULFI	98653	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	0.563
DE (UG/G-DRY)	98654	<1.00	<1.00	<1.00	<1.00	<0.400	<0.400	<0.400
ATRAZINE (UG/G-DRY)	98655	<0.500	<0.500	<0.500	<0.500	<0.700	<0.700	<0.700
SUPONA (UG/G-DRY)	98656	<0.900	<0.900	<0.900	<0.900	<0.500	<0.500	<0.500
DHMP (UG/G-DRY)	98657	<3.00	<3.00	<3.00	<3.00	<2.00	<2.00	<2.00
ETY*PARATHION (UG/G-DRY)	98658	<2.00	<2.00	<2.00	<2.00	<0.700	<0.700	<0.700
CARBON TETRACHLORIDE	98659	NA	NA	NA	<0.400	NA	NA	NA
CHLOROBENZENE	98660	NA	NA	NA	<0.300	NA	NA	NA
CHLOROFORM	98661	NA	NA	NA	<0.700	NA	NA	NA
1,1-DICHLOROETHANE	98662	NA	NA	NA	<0.500	NA	NA	NA
1,2-DICHLOROETHANE	98663	NA	NA	NA	<0.400	NA	NA	NA
BICYCLOHEPTADIENE	98664	NA	NA	NA	<0.000	NA	NA	NA

ENVIRONMENTAL SCIENCE & ENGINEERING

PROJECT NUMBER 84936300

FIELD GROUP: 3617Z

SAMPLES: ALL

98/11/86

STATUS: PRELIMINARY

PROJECT NAME SECTION 36 RMA

PROJECT MANAGER: BILL FRASER

FIELD GROUP LEADER: GEISLER/BERGOLL

[illegible]

ENVIRONMENTAL SCIENCE & ENGINEERING

01/11/86

STATUS: PRELIMINARY

PROJECT NUMBER 84936300

PROJECT NAME SECTION 36 RMA

FIELD GROUP: 36172

PROJECT MANAGER: BILL FRASER

PARAMETERS: ALL

FIELD GROUP LEADER: GEISLER/BERGQELL

PARAMETERS	STORET #	METHOD #	SAMPLE NUMBERS											
			3095A 505900	3095B 505901	3096A 505906	3096B 505907	3097A 505912	3097B 505913	3098A 505918	3098B 505919	3099A 505924	3099B 505925		
DATE			07/11/85	07/11/85	07/11/85	07/11/85	07/10/85	07/10/85	07/10/85	07/10/85	07/10/85	07/10/85		
TIME			020	046	725	740	1109	1129	958	1012	819	342		
UNK635 (UG/G)	90007					2.32								
UNK593 (UG/G)	90052		NA	NA	NA									
UNK609 (UG/G)	90066		0.323											
UNK632 (UG/G)	90084		NA	NA	NA									
UNK543 (UG/G)	90025		NA	NA	NA									
UNK579 (UG/G)	90043		0.323											
UNK544 (UG/G)	90026		NA	NA	NA									
UNK604 (UG/G)	90061			1.10										
UNK546 (UG/G)	90028		NA	NA	NA									
UNK548 (UG/G)	90029		NA	NA	NA									
UNK629 (UG/G)	90002		0.215		1.13									
UNK522 (UG/G)	90014		NA	NA	NA									
UNK517 (UG/G)	90012		NA	NA	NA									
UNK513 (UG/G)	90116													
UNK523 (UG/G)	90092													
UNK532 (UG/G)	90020													
UNK655 (UG/G)	90119													
UNK636 (UG/G)	90008													
UNK641 (UG/G)	90107													
UNK654 (UG/G)	90113													
	0													

A 0.784 A 1.01

A 1.00 A 1.01

A 0.390

A 0.550

ENVIRONMENTAL SCIENCE & ENGINEERING

01/11/66

STATUS: PRELIMINARY

PROJECT NUMBER 04936300

FIELD GROUP: 36172

PARAMETERS: ALL

PROJECT NAME SECTION 36 RNA
PROJECT MANAGER: BILL FRASER
FIELD GROUP LEADER: GEISZLER/BERGDUHL

SAMPLES: ALL

PARAMETERS	STORET #	3100A 505930	31003 505931	3101A 505936	3101B 505937	3102A 505942	3103A 505948	3103B 505949	3104A 505954	3104B 505955
DATE	METHOD #	06/20/85	06/20/85	6/24/85	6/24/85	06/20/85	06/20/85	06/20/85	06/20/85	06/20/85
TIME		1017	1030	736	751	913	931	823	637	729
UNK635 (UG/G)	90087	2.20	1.21			7.28	3.39		3.42	5.74
UNK593 (UG/G)	90052	2.20								0.773
UNK609 (UG/G)	90066	>6.60				1.04		1.06		
UNK632 (UG/G)	90084	2.20	4.85			2.08	1.13	2.12	1.15	1.10
UNK543 (UG/G)	90025								0.115	
UNK579 (UG/G)	90043		1.09			0.728	1.13	0.743	0.459	0.442
UNK544 (UG/G)	90026		2.43							
UNK604 (UG/G)	90061					3.12				
UNK546 (UG/G)	90028									
UNK548 (UG/G)	90029									
UNK629 (UG/G)	90082	NA	NA			NA	NA	NA	NA	>3.31
UNK522 (UG/G)	90014									
UNK517 (UG/G)	90012	NA	NA			NA	NA	NA	NA	NA
UNK513 (UG/G)	90116			1.71						
UNK523 (UG/G)	90092				1.42					
UNK532 (UG/G)	90020				0.069					
UNK655 (UG/G)	90119									
UNK636 (UG/G)	90088			1.00	0.722					
UNK641 (UG/G)	90107									
UNK654 (UG/G)	90113			0.565	0.342					

ENVIRONMENTAL SCIENCE & ENGINEERING

01/11/86

STATUS: PRELIMINARY

PROJECT NUMBER 84936300
FIELD GROUP: 36172
PARAMETERS: ALL SAMPLES: ALL

PROJECT NAME SECTION 36 RMA
PROJECT MANAGER: BILL FRASER
FIELD GROUP LEADER: GEISLER/BERGOLL

PARAMETERS	STORET #	3100A	3100B	3101A	3101B	3102A	3102B	3103A	3103B	3104A	3104B
		505930	505931	505936	505937	505942	505943	505946	505949	505954	505955
DATE	METHOD #	06/20/85	06/20/85	6/24/85	6/24/85	06/20/85	06/20/85	06/20/85	06/20/85	06/20/85	06/22/85
TIME		1017	1030	1336	1751	913	931	023	937	139	172
UNK547 (UG/G)	9J094										
	0										
UNK637 (UG/G)	9J089										
	0										
UNK527 (UG/G)	9J017										
	0										
UNK614 (UG/G)	9J070										
	0										
UNK538 (UG/G)	9J123										
	0										
UNK610 (UG/G)	9J124										
	0										

* 3.08

* 0.547

ENVIRONMENTAL SCIENCE & ENGINEERING
 PROJECT NUMBER 84936300
 FIELD GROUP: 36172
 PARAMETERS: ALL
 SAMPLES: ALL
 STATUS: PRELIMINARY
 PROJECT NAME SECTION 36 RMA
 PROJECT MANAGER: BILL FRASER
 FIELD GROUP LEADER: GLISZLER/BERGQUI

01/11/86

SAMPLE NUMBERS
 BLK 505991
 BLK 505992

PARAMETERS	STORET #	BLK 505980	BLK 505981	BLK 505982	BLK 505990	BLK 505991	BLK 505992
DATE	METHOD	6/24/85	6/25/85	7/10/85	06/24/85	06/25/85	07/10/85
TIME		0	0	0	0	0	0
DMP (UG/G-DRY)	98645	<0.500			<3.00	<3.00	
DICHLORVUS (UG/G-DRY)	98646	<0.300			<0.300	<0.300	
HEXCLCYPENDI (UG/G-DRY)	98647	<1.00			<1.00	<1.00	
MALATHION (UG/G-DRY)	98648	<0.600			<2.00	<2.00	
ISODRIN (UG/G-DRY)	98649	<0.300			<0.600	<0.600	
1,4 DITHIANE (UG/G-DRY)	98650	<0.300			<2.00	<2.00	
DICYCLOPENTADIENE (U G/G-DRY)	98651	<0.300			<6.00	<6.00	
DBCP(ENEMAGUN) (UG/G-DRY)	98652	<0.005			<0.005		
P-CLPHENYLMETHYLSULF1	98653	<0.300			<0.300	<0.300	
LE(UG/G-DRY)	98654	<0.400			<1.00	<1.00	
P-CLPHENYLMETHYLSULFO	98655	<0.700			<0.500	<0.500	
NE(UG/G-DRY)	98656	<0.500			<0.900	<0.900	
ATRAZINE (UG/G-DRY)	98657	<2.00			<1.00	<1.00	
SUPONA (UG/G-DRY)	98658	<0.700			<2.00	<2.00	
DMP (UG/G-DRY)	98659						
ETP-PARATHION (UG/G-DRY)	98660						
CARBON TETRACHLORIDE (UG/G-DRY)	98661						
CHLOROBENZENE (UG/G-DRY)	98662						
CHLOROFORM (UG/G-DRY)	98663						
1,1-DICHLOROETHANE (UG/G-DRY)	98664						
1,2-DICHLOROETHANE (UG/G-DRY)	98665						
BICYCLOHEPTADIENE (UG/G-DRY)	98666						

ENVIRONMENTAL SCIENCE & ENGINEERING 01/11/86 STATUS: PRELIMINARY
 PROJECT NUMBER 84936300 PROJECT NAME SECTION 36 RMA
 FIELD GROUP: 3617Z PROJECT MANAGER: BILL FRASER
 PARAMETERS: ALL SAMPLES: ALL FIELD GROUP LEADER: GEISZLER/RENGOOLL

PARAMETERS	STORET #	BLK 505980	BLK 505981	BLK 505982	BLK 505990	BLK 505991	BLK 505992
METHOD #							
DATE	6/24/85	6/25/85	7/10/85	06/24/85	06/25/85	07/10/85	
TIME	0	0	0	0	0	0	0
TRANS-1,2-DICHLOROE	98687						
ENE (UG/G-D)	0						
ETHYLBENZENE	98688						
(UG/G-DRY)	0						
METHYLENE CHLORIDE	98689						
(UG/G-DRY)	0						
TETRACHLOROETHENE	98690						
(UG/G-DRY)	0						
TOLUENE	98691						
(UG/G-DRY)	0						
1,1,1-TRICHLOROETHAN	98692						
E (UG/G-D)	0						
1,1,2-TRICHLOROETHAN	98693						
E (UG/G-D)	0						
TRICHLOROETHENE	98694						
(UG/G-DRY)	0						
M-XYLENE	98695						
(UG/G-DRY)	0						
MIBK	98696						
(UG/G-DRY)	0						
DMS	98697						
(UG/G-DRY)	0						
BENZENE	98699						
(UG/G-DRY)	0						
O-AND/OR P-XYLENE	98700						
(UG/G-DRY)	0						
PCPMSO2	98703						
UG/G-DRY	0						
COORDINATE-N/SCIP	98392						
COORDINATE-E/MCSTP	98393						
UNK634 (UG/G)	90686						
UNK542 (UG/G)	90024						
UNK608 (UG/G)	90065						
UNK633 (UG/G)	90085						
	0						

<0.400 <0.400

<0.300

ENVIRONMENTAL SCIENCE & ENGINEERING
 PROJECT NUMBER 84336300
 FIELD GROUP: 3617Z
 PARAMETERS: ALL
 SAMPLES: ALL
 STATUS: PRELIMINARY
 PROJECT NAME SECTION 36 RMA
 PROJECT MANAGER: BILL FRASER
 FIELD GROUP LEADER: GEISLER/BERGLOLL

PARAMETERS	STORET #	BLK	505980	BLK	505981	BLK	505982	BLK	505990	BLK	505991	BLK	505992
	METHOD #	6/24/85	6/25/85	7/10/85	06/24/85	06/25/85	07/10/85	0	0	0	0	0	0
DATE													
TIME													
UNK635 (UG/G)	90087												1.02
UNK593 (UG/G)	90052												
UNK609 (UG/G)	90066												
UNK632 (UG/G)	90084												
UNK543 (UG/G)	90025												
UNK579 (UG/G)	90043												
UNK544 (UG/G)	90026												
UNK604 (UG/G)	90061												
UNK546 (UG/G)	90028												
UNK548 (UG/G)	90029												
UNK629 (UG/G)	90082												
UNK522 (UG/G)	90014												
UNK517 (UG/G)	90012												
UNK513 (UG/G)	90116												
UNK523 (UG/G)	90092												
UNK532 (UG/G)	90020												
UNK655 (UG/G)	90119												
UNK636 (UG/G)	90068												
UNK641 (UG/G)	90107												
UNK654 (UG/G)	90113												

0.612

0.306

* 0.485

* 0.818

* 0.557

* 0.370

ENVIRONMENTAL SCIENCE & ENGINEERING

01/11/86

STATUS: PRELIMINARY

PROJECT NUMBER 34936300

FIELD GROUP: 3617Z

FIELD GROUP: J0472
PARAMETERS: ALL
SAMPLES: ALL

PROJECT NAME SECTION 36 RMA
PROJECT MANAGER: BILL FRASER
FIELD GROUP LEADER: GEISLER/BERGDOLL

PARAMETERS

STORE #

BLK
505980

BLK
505981

BLK
505902

BLK
505990

BLK
505991

ELK
505992

SAMPLE NUMBERS

RETHED M

DATE	TIME	LOCATION	REMARKS
6/24/85	7:10/85	06/24/85	06/25/85 07/10/85

DAIE

TIME

0

3

0

0

0

UNK547 (UG/G)

96094



UNK637 (UG/G)

90089

5

UNK527 (UG/G)

95017

03

UHK614 (UG/G)

90070

92

UNK538 BT5XHN

90123

Q.

UNX610 (UG/G)

90124

Q